

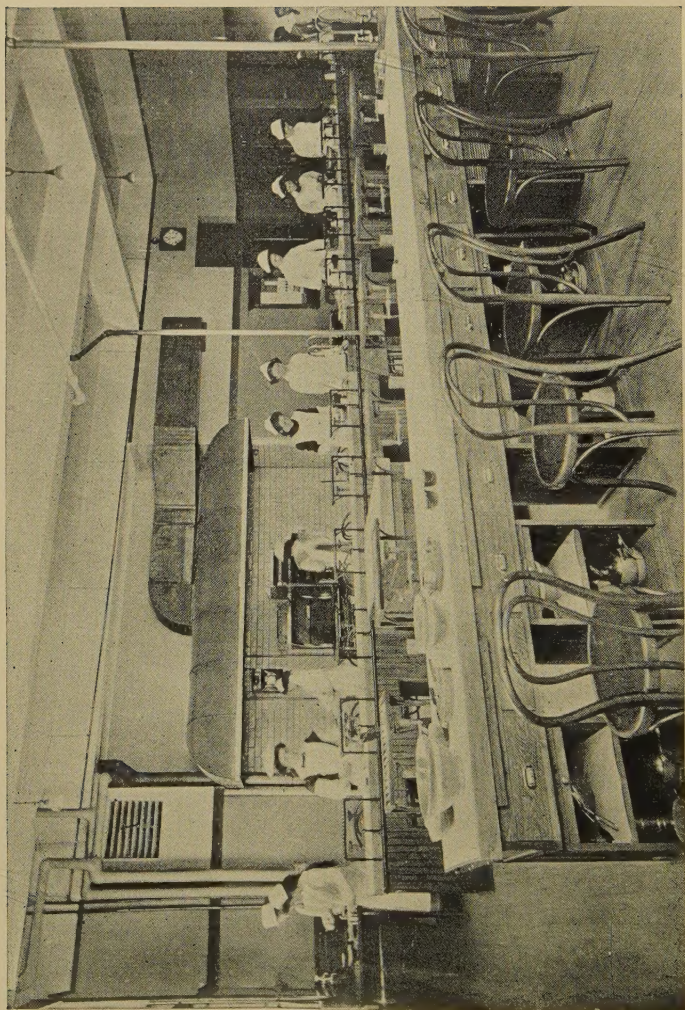
THE SCHOOL KITCHEN TEXTBOOK

LESSONS IN COOKING AND
DOMESTIC SCIENCE



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MARY J. LINCOLN



A Modern High School Laboratory Kitchen

THE SCHOOL KITCHEN TEXTBOOK

LESSONS IN COOKING AND DOMESTIC SCIENCE
FOR THE USE OF ELEMENTARY SCHOOLS

BY

MARY J. LINCOLN

AUTHOR OF "THE BOSTON COOK BOOK"

ILLUSTRATED



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THIS BOOK IS DEDICATED
TO
BEGINNERS IN THE STUDY OF COOKERY
WITH THE HOPE THAT IT WILL
INSPIRE THEM WITH ENTHUSIASM FOR FURTHER
KNOWLEDGE AND AN APPRECIATION
OF THE
DIGNITY OF HOME KEEPING

PREFACE

WHEN the author's Boston School Kitchen Text-Book was written in 1887, instruction in cooking in the public schools of America was in the experimental stage, the only work which had been done being in a Boston schoolroom under philanthropic management. At the request of the founder of this experimental school the Boston School Kitchen Text-Book was written to show that an economical course of study and practice in cookery could be arranged for the public schools. At that time there were practically no schools for the training of teachers of cookery and the literature of the subject was almost non-existent. The book, therefore, was designed to aid the teacher as well as the pupil and that it has accomplished this double purpose has been proved by its use in the many cooking courses now established in this country, as well as abroad.

For some time a revision of the Boston School Kitchen Text-Book has been demanded to meet the requirements of the new era of school instruction and of housework, for we now find public school instruction in cooking and sewing in the schools of all sections; training schools and colleges for teachers; a literature worked out by scientists, and a wide public demand for such vocational instruction. The present volume is not a revision of the Boston School Kitchen Text-Book; it is a new book embodying the results of scientific investigation and research, as well as the experience of successful teachers in the schools.

The main food groups, the processes of cookery, the simpler chemical elements and their action are discussed with special reference to elementary work both in the home and the school. Many recipes are given so that it is possible for the teacher to select one to illustrate the principle contained in any lesson. Great emphasis has been placed upon

the housekeeping lessons which are designed to follow along and supplement the actual work in cookery.

Every effort has been made to make the work practical and as easy for the teacher as possible. The lessons are so arranged as to take up the foods at the time when they can be procured most easily for the school work or would be naturally available in the home.

Special attention has been paid to the latest educational movement to combine the interests of the home and school in the system of "School Credit for Home Work", which originated in Oregon and which has now spread to all the states.

Boys as well as girls are awaking to the fact that "doing chores for father" or "helping mother with the housework" has a definite value, and will be credited on their school record, as surely as their work in their studies.

It has been found perfectly feasible to teach pupils the fundamental principles of cooking, hygiene, cleanliness, and many of the household duties, in schools where little or no equipment for practice work is possible and where teachers have had no special training along these lines. The method is as follows:—

The lesson is read from the **TEXTBOOK**; the principles discussed, and the recipe selected from those bearing on the lesson.

Under direction of the teacher, the pupil takes the recipe home and prepares the food according to the directions in the book, with advice, but no assistance, from her mother.

The pupil brings to school in her luncheon a part of this prepared food and exhibits it to the teacher together with the following certificate, or a similar one, signed by the mother:—

This certifies that _____ has prepared Recipe No. _____ according to directions in the "School Kitchen Textbook", with advice from me but no active help, and the food exhibited is a part of that preparation.

Remarks:—

Signed:

By this method the time for recitation is reduced to about one fourth of what is required when the cooking is done at the school.

Similar certificates are given by the mother for time spent in the home work, in sewing, and in acquiring improved habits in hygiene and cleanliness.

Throughout the book it has constantly been borne in mind that the students who will use it in their work are not trained scientists but the future home-makers, who will need definite and concrete methods and directions so that the practical character of their instruction will stimulate their interest and thus help to overcome the "leaving school" problem. It is also believed that the method of presentation of the material and the untechnical discussion will appeal to and aid many of the mothers as the home work is done.

MARCH, 1915.

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SCHOOL KITCHEN TEXTBOOK

INTRODUCTION

CHAPTER I

CLEANING AND HOUSEWORK

SECTION I

Air and Ventilation

Air. If we consider food in its largest sense as "anything taken into the system to support life," it must include air and water as well as what we commonly term solid food. Of these three essentials to life, air is the most important; we can live a short time without food or water, but only a few minutes without air.

Air is a mixture of two invisible gases, one part oxygen and four parts nitrogen.

Oxygen is a colorless, tasteless gas, which unites readily with other elements. At a *low* temperature it causes iron to rust and wood to decay, and changes or decomposes all vegetable and animal substances, producing slow combustion. At a *high* temperature it combines with the elements hydrogen and carbon and produces fire. If the air were all oxygen everything would be consumed by burning; but it is diluted with four parts of nitrogen, — an invisible, incombustible gas, which does not unite readily with other elements; and this makes the air sufficiently mild for us to breathe.

Air also contains water vapor and carbon dioxide, — a heavy, colorless, incombustible gas, composed of one part carbon and two parts oxygen.

Carbon exists as an element only in solid form, as the graphite in our lead pencils and the gem known as the diamond. But in combination with other elements it is everywhere present, in the form of solids, liquids, and gases.

As a solid it is found in all animal and vegetable substances such as the meat, bread, vegetables, and the like which we eat and make into body tissues, and the wood and coal which we burn.

As a liquid we have it in the oil on our salads, the sweet juices of fruits, the cream in milk, and also in medicinal oil.

As a gas we take it in pure drinking water, and in larger proportions in soda water and other effervescing beverages; also in the bread and cakes which are made light by its use. In these forms its effects on the stomach are wholesome. But its principal gaseous form is in the air we breathe, where it has been produced by our own respiration and that of all living animals, and also by the decay of all organic matter.

We breathe in oxygen from the air and also carbon dioxide; but when this carbon dioxide is diluted in the right proportion, as it is in the pure out-of-door air, its effects on our lungs are harmless. Because out of doors the plants, when in the sunlight, take in through their leaves the carbon dioxide which we have breathed out and they convert it into *plant* tissue. This helps to make the out-of-door air purer than that indoors. The oxygen, which we breathe in, unites with the carbon in our blood, producing heat to keep us warm, and carbon dioxide which we must get rid of as quickly as possible, by deep, full breathing. When there is an excess of it in the air, it is difficult for us to breathe. When there is more than a certain amount, we faint or suffocate. In the house this carbon dioxide which we breathe out remains in the rooms, and unless there is a constant supply of fresh air coming in, sufficient to blow this bad air away from us, we feel uncomfortable; our lungs are hungry for more oxygen. When many persons are in a small, close room, or lamps and gas lights are giving out carbon dioxide, the air soon becomes dangerous to breathe.

In some places air contains noxious gases, and everywhere there are floating particles of earthy matter, smoke and soot

which we can see ; also many very minute forms of life, known as germs or microbes, which are invisible except under a powerful microscope.

These floating particles are always in the air and you can see them by looking steadily at a ray of sunlight shining into the room. They are blown about here and there and are seldom motionless, but in the house where there is not sufficient air to keep them moving, they settle on floors and furniture where we can see them ; also on walls and many places where they are not visible : making what is usually called dust.

Many of these dust germs, if they are in a warm moist place, can produce other tiny plants some of which are useful and help us in the changes which cooking produces in food. Yeast which we use in bread making is one variety of these useful plants. Mold on bread is an objectionable variety.

Other germs are poisonous, and if we are weak, ill-fed, or have not sufficient oxygen in our blood to destroy these germs when they get into our system, they develop disease. Therefore to avoid them we must breathe plenty of pure air, keep ourselves and our food clean, and keep the air as clean as possible.

Ventilation. We can improve the air in our rooms in several ways.

First. Open windows so that bad air may get out and good air get in at all times and especially at night, and in such a way that no one will be exposed to a draft stronger than he can bear. One of the most effectual ways is to raise the lower sash, put a fitted board under it and then the fresh air will come in between the sashes in the middle of the window. When the air outside is not very cold, lower the upper sash letting out the hot air and raise the lower sash letting in the cold air. When it is not practical to have a continuous draft of fresh air, give the house an air flushing several times a day. Early in the morning, open doors and windows on opposite sides if possible, that a great volume of air may blow through several rooms at once, which for that brief time need not be occupied. Repeat this during the day, always after cooking has been done ; also at night before retiring, especially

in rooms where lights have consumed much of the oxygen. Keep the temperature between 66° and 70° during the daytime.

Second. Destroy or remove all garbage every day. Do not allow any decaying animal or vegetable matter, or stagnant water to remain in or near the house, especially in the cellar. These not only vitiate the air, but draw flies, mosquitoes, water bugs, and the like, that may bring in disease-producing germs.

Third. Screen windows and doors and make special effort not to let flies get inside or remain if they chance to elude your vigilance.

Fourth. Let in all the sun possible, at least during part of the day, for this removes dampness and destroys many of the objectionable germs.

Fifth. Cultivate clean personal habits with all your clothing and other belongings; bathe frequently and exercise regularly. Keep your food clean by care in its preparation and serving, and freedom from dust in its storage places. Keep your house and its furnishings clean, by frequent washing of all its surfaces exposed to personal contact, by daily sunning or airing of beds and draperies, by the regular removal of household litter, street dirt, etc., and by the most effective methods of sweeping and dusting.

SECTION II

Personal Cleanliness

Dress. The dress for work in the school kitchen or the home should be short, simple, and appropriate, preferably of washable material.

An apron to protect the dress is even more necessary in the school kitchen than at home, for the school dress, except in summer, is usually of woolen material. Many persons prefer an apron with a bib and without sleeves; but one made to button in the back just below the collar, and with long, loose sleeves and large enough to come well around the hips, is much more comfortable and sensible.

The belt should have a hand towel fastened at the left side, and a holder suspended on the right side by a tape of convenient length.

Something over the hair (not a mere bow) which is large enough to prevent loose hairs from falling, is needed, and it may be merely a silk net, held in place by an elastic cord, if a thicker cap is objectionable. The hair should not hang down the back but be drawn up firmly.

Rings and bracelets should not be worn during the lesson.

Wash the hands thoroughly and see that the nails are perfectly clean, before you begin any work, and as often during the lesson as there is need.

The keen sense of touch in clean, sensitive finger tips, is a great help in deciding many points in the manual part of cookery, and one loses much if this sensitiveness is lessened by grime, or grease, or dough.

Wiping the hands on the towel at the side will be sufficient at times, but use water for anything that really adheres.

Always wipe them before touching any food or dish, and form the habit of wiping every dish or utensil before using it for food.

Personal cleanliness, of under and outer clothing, and of the entire body is not a fad ; it is a vital matter, and should be cultivated until it is as natural as breathing.

If you have any of the following untidy habits, which have been observed among some pupils, strive at once to make yourself perfect in this respect :

Do not use your handkerchief, or apron, in place of a towel or holder.

Do not work with sticky or floured fingers, or lick your fingers.

Do not put your hands on your face, or your hair, or use your handkerchief at your nose, without immediately wiping your hands on your towel.

Do not use a hand towel as a dish towel, or the hand basin for food.

Do not taste with the mixing spoon. Pour from the mixing spoon into a tasting spoon. In dipping into any thick mixture, wipe the tasting spoon before each using.

Do not use a sponge in cleaning food.

Wipe every tool and utensil before using on food and wash all that have been exposed to dust or have been used recently.

Do not leave the spoon in the pan when food is cooking.

Do not shake food from the spoon by striking on the edge of the bowl or pan. It will nick china and crack enamel.

If a strong shake, without contact with the pan, does not dislodge it, remove with a knife.

CHAPTER II

SWEEPING AND DUSTING

The dress for home kitchen work should be comfortable in style and of washable material. The skirt should be plain and short, and the sleeves large enough to be easy over the elbow. Cuffs and bands are in the way and if turned back soon become mussy. Make the sleeve with one seam nearly straight and the same width at the wrist as above the elbow; finish the edge with a half-inch hem. Then when at work you may turn the bottom over and up as far as you wish. It will fit smoothly if turned back evenly, will stay at any height without pinning, and will not bind the arm. When your work is done, it will be smooth and clean.

Protect the hair with a sweeping-cap of thin material. A large pocket handkerchief with a half-inch hem, folded down the middle and sewed at the upper end, may be slightly fitted to the head by box plaits on each side about five inches from the top and at the back of the neck. Turn the lower corners over diagonally and catch at the point. It fits over the hair in sunbonnet-style, is light, easily washed, and cooler than a close cap.

Sweeping. Put away or cover all food before beginning to sweep the kitchen and pantry. Brush off the stove and around it, dust window sills and shelves, and put away all things not belonging in the room. Use a short-handled, bristle or twine brush in the corners, mop-boards, and ledges, and wipe the walls with a long brush. Sweep with a bristle brush or a broom; hold it close to the floor, taking the dirt along with short strokes, instead of tossing it into the air. Sweep toward the centre and go back frequently to catch any fluff that may have blown back. Brush the dirt into a

dust pan and burn it at once, if possible, opening the pipe damper that the odor may go up the chimney. If you use a gas stove turn the sweepings into the refuse pail, not the garbage pail but the covered pail for papers and other dry refuse.

Floors that are carpeted all over, or with large rugs that cannot be moved easily, may be cleaned daily, or when dusty, with a carpet sweeper.

This takes up the dust without scattering it, provided the brush in the sweeper is clean, and makes the weekly sweeping much easier. This brush should be washed frequently.

Go over the bare places between rugs with a dry mop, using a short-handled twine-mop for corners and under desks, bookcases, and radiators.

Then go over rugs with a carpet sweeper, pushing it with the nap of the rug.

For a thorough sweeping of a carpet where more or less dust is unavoidable, first dust the small things on the mantels and bureaus, lay them on a table, sofa, or bed, and cover them with cloths made for this purpose.

It makes needless work and confusion through the house to remove the furniture into other rooms before sweeping. If you learn how to sweep without raising much dust and how to take up and hold dust, instead of scattering it, you can sweep a room without disarranging the furniture. Small pieces of furniture may be put together at one end of the room, or moved just enough to allow one to sweep around where they stood, and be replaced at once. Sweep a small place, take up the sweepings with a carpet sweeper and put things in place as you go along and if suddenly interrupted it will take but a minute to remove all traces of your work.

Brush any stuffed-chairs with a small corn-broom or bristle-brush; wipe and cover with dust covers, of which one should have a full supply made of old sheets, cheap muslin, or cheese cloth. Wipe back of pictures with a dust cloth and the walls with a bag on a broom or a long-handled wall broom. Take things in turn as you go around the room from the highest to the lowest; fold the dust into the duster and thus avoid scattering it.

Close the doors into other rooms and the windows, if the wind blows into the room. Shake out the curtains and draperies and brush the screens.

When all the little things are out of the way and there is no more dust to fall on the carpet you are ready to sweep. Do not use wet tea leaves on the carpet, for they stain the light places and one could never have enough of them; wet meal makes more hard work; a dampened broom answers for a small rug, but for a large rug or carpet there is nothing better than wet newspaper. But it should not be torn into tiny pieces, as is the usual custom. Tear several papers in half sheets, lay them in water and crumple just enough to squeeze out the water until it no longer drips. Then open the sheets and lay them lightly along the end where the sweeping is to begin, a few inches from the edge. Do not lay them flat but so they will stand up slightly, making a wall of damp paper that covers a strip at least a foot wide and against which the dust will lodge as you sweep. Begin at one end and sweep with a short, bearing-down, hard stroke; then turn and in going back sweep the paper along with the dust. The paper will catch and hold nearly all of it, and if the paper is covered thickly, put down a fresh layer. With a large rug, sweep clear to the end the way of the wool, but with a carpet sweep from the sides to the middle, laying the wet paper round all the edges when beginning.

Collect the sweepings and look for any straggling bits of fluff; open the windows, and when the dust is settled, go round again with a fresh duster.

Damp the cloth slightly, except for highly polished surfaces, and change to a clean cloth when the first is grimy. Several cloths are required to do an entire room.

Shaking the duster removes the fluff but not the grime, and should not be done anywhere. If shaken out of the window the chances are that more dust blows back than goes out. Washing is the only way to remove it from the cloth.

Use old soft silk, muslin, or any material that will not shed lint. It is seldom necessary to buy a duster, for there should be enough suitable material in the house. Dusters

of mercerized cotton flannel are suitable if you have to buy, for they are easily washed.

Wash the hands frequently during the work, — always before handling books. Put things back into their places and give a finishing touch wherever needed.

CHAPTER III

SECTION I

The Care of Bedrooms

If possible have the bed placed where all parts may be reached easily without moving the bedstead; but if it must be in a corner, draw it away from the wall at night.

Whether the mattress shall be of the best long curled-hair, or short hair, or cotton or excelsior with a thin layer of hair, will depend upon the purse. But whichever kind you have, the part that depends upon you is to keep the ticking clean.

If possible a mattress should be made so that it may be handled easily, especially if young girls are to do the bed-making.

A mattress made in one part is too heavy even for a strong woman to lift or turn over. When made in two parts, one square and one narrow, the square part is often too large to handle alone and the narrow part gets no wear.

Experience with mattresses made in three parts of equal width, for double-beds and for couches, has shown that the labor of bed-making is greatly lessened and that each part of the mattress gets an equal amount of wear.

The width of each part is one-third of the length of the bedstead, so they fit in snugly. They can be turned or carried about with no effort. Each part should have two cases so they may be changed when soiled. The cases are made of sheeting, stitched on the sides and one end; the other end is hemmed and left open. These cases are large enough to slip on like a pillow case and are caught together with short basting stitches, which have proved better than buttons or tapes.

Mattresses should be further protected by a thick pad of quilted cotton and a strip of rubber sheeting drawn smoothly across the middle. Pillow ticks are protected by using an inner case, a little shorter than the outer, and which is changed less frequently.

On rising open the bed at once, pat and shake the pillows and put them on a chair near the window, not on the grimy window sill. The clothes may be spread out over two chairs before the window, or, on damp mornings, near the radiator. If space is limited turn them over the foot rail or board, letting the ends rest on a chair to keep them from the floor; or better still (as chairs will tip over) keep a box at the foot of the bedstead, with hinged covers and casters, which may be used as a seat, or for clothing and extra bedding, or as a couch.

Do not throw the bedclothes all over together with the mattress on top, nor hang them out of the window to flap against grimy walls.

When pressed for time or space to spread out the bedding, try this way.

Stand at the foot of the bed in the middle; pull the spread toward you and take an upper corner in each hand; draw it up and out even with the foot board; then lay the upper end back over the board, letting it hang over inside about a foot. Make preparations for your bath, or put on slippers and bath gown and start the kitchen fire and water for the cereal.

On returning, pull the blanket over in the same way and go on with your bath; after five or ten minutes repeat with another blanket, and if you keep this work in mind, before you leave the room all the bed clothing will have been opened out to the air and yet be out of the way. Then raise each part of the mattress up and over toward the head and free it entirely from the bedclothes at the foot. See that the bedclothes hang down smoothly between the spring and foot board and give them a gentle shake that the fluff and lint may drop in one place instead of being shaken all about the room.

Before putting on your dress arrange the mattress even with the spring, turning it about every other day, put on the

pad and draw the under sheet up slightly by the top corner which is near at hand on the foot board, instead of in a tangle on the floor. Tuck it under the mattress at the foot, then draw it tight at the top, tuck in, and fold under at the side, making a square corner.

Then don your dress; put away all toilet articles and clothing, and leave your personal belongings in order. The bed may be left in this orderly condition for further airing, and it will take but a few minutes to finish the work after breakfast. If you cannot make it before school time, it will do no harm to let it air in this way until noon.

Occasionally, or daily when practicable, draw the under sheet up by the corners towards the middle and shake it in the air from a rear veranda or window, leaving it to hang on a line until well aired.

When ready to finish the bed-making draw the top sheet over slightly, and be careful to have the middle fold in line with the middle of the bedstead. Tuck it in tight at the foot first, letting it come under the mattress about eight inches, so that it will not pull out at night. Then draw the sheet close to the top till smooth and tight. Sheets should be at least two-and-three-quarters yards long for then there will be half a yard to turn back over the blankets. Three yards is a better length for a bed of full size.

Draw up the blankets singly in the same way, making them even and tight at the foot. Some persons prefer that blankets be drawn close up to the headboard that they may come well over the shoulders and neck; others want them from four to ten inches below the top. When blankets are too short, draw the top blanket down enough to tuck in well at the foot, or use another sheet between the blanket and the spread to hold the blankets in place, as the spread is not tucked in on an iron bedstead. It saves labor to cut double blankets in two and bind the cut ends. Use a light-weight or dimity spread, which may be washed as easily as a sheet and need not be removed at night. But if you prefer to remove it, that it may not be tumbled, or must use a heavy or fancy counterpane, always spread a sheet over the blanket. If windows are open all night, as they should be, uncovered

blankets will soon become grimy and need frequent cleansing.

Draw the spread up to the top and see that it hangs evenly all around. Spreads for iron bedsteads should be wide as well as long, that they may come a little below the side-frame.

Turn only the upper sheet over at the top and even with the edge of the mattress. Shake and pat the pillows until smooth and if large, stand them against the headboard, if small, lay them flat.

The important points to remember in bed-making are these.

Sheets and light spreads are easy to wash; blankets, mattresses and pillows are hard to wash; therefore protect the latter by suitable covers and frequent air and sun-cleansing.

Never turn back the spread and lie on the blanket; never put newspapers, soiled clothing, travelling bags, or anything that is not clean on the blankets.

At night let the upper sheet come well over the spread or blanket to protect it from the hands and face.

A bed is made for the comfort of the person occupying it, therefore, while in general you should follow established methods in making it, learn if possible the preferences of each person, and have the blankets few or many, high or low, and tucked in or loose, as desired.

Run the carpet sweeper over the floor daily where needed. In the weekly sweeping, brush and wipe the bedstead and spring, and then proceed as directed in the preceding lesson.

Bed Linen. On Saturday or Sunday remove the pillow cases and lower sheet, and the upper one also if too soiled to use as the under sheet. If a clean lower sheet is used, put it on right-side up; if not, put the soiled upper sheet on right-side down that one may lie on the cleaner side. Put the clean upper sheet on right-side down, that when it is turned over the spread, the hem may be right-side up.

The wide hem is the top. Beds occupied by restless sleepers, or those who work in dusty places, should have the linen changed more frequently.

Spreads are changed when it is necessary ; blankets if hung in the sun weekly and used with care, need washing only twice a year.

Bed-time Work. In the evening you may help mother by opening the beds or by bringing out the night gowns for the younger children. If a guest be with you, remove the extra pillows from the bed ; also the covers, and anything not needed. Fold over the upper bed clothing and turn the corners over diagonally ; open the windows to change the air ; bring in fresh, cold water for drinking, and a pitcher of hot water. See that the matches and a candle are on a stand near the bed ; bath gowns laid out, and any other little personal attention given that will be agreeable to the guest.

When changing your working dress, or undressing at night, hang your clothing where it can air a while. Hang waists inside out on a chair. Air night gowns and bath robe. Never put soiled underwear or damp clothing into the closet. Keep the closet clean, fresh, and in order.

The Care of Wash Stands. Keep a cloth on the towel rack for cleaning and wiping the toilet set. Always empty the dirty water from the bowl when you finish washing ; wipe off the grime ; rinse ; add fresh water, and wash and wipe the soap, the dish, and the other articles. Do not forget to wash out the sediment in the pitcher before filling it with fresh water. Empty the jar ; wash with cold water ; rinse with warm suds, and then with clear water. Do not use hot water on china jars as it may crack the glaze and odors will be absorbed. Wipe and put each article into its proper place. Remove soiled towels and use clean linen as needed ; with care in washing, towels need not be changed every day. Shake them out and hang them in the air or near the radiator to dry. Fold once lengthwise and hang them straight on the rack. Do not put wet or damp towels, or any damp underwear, into the soiled-clothes hamper. Dry them first and thus prevent mildew.

Girls should not leave this work for mother to do ; it is an easy matter to keep the bowl and small articles clean, if done at once after they have been used. Nothing makes a bedroom so untidy as a disorderly washstand, and nothing

betrays lack of home training and of innate refinement so much as untidy personal habits. Avoid all carelessness in this respect in your daily home life.

SECTION II

Care of the Bathroom

The cleaning of faucets you will learn about under "Cleaning Metals," but if you have the old-style plumbing remember that the chain and basin-stopper should be scoured daily; the lint and hair removed from the pipe, and any portion of the basin that comes in contact with the water be cleaned thoroughly. Wipe out the holes in the overflow with a small skewer. Scrub the bath tub, the basin, and seat of the toilet; wash and wipe the soap dishes and glasses, and put all toilet articles in order, and as many as possible out of sight. Hang damp towels where they may dry, and have a special rack for fresh towels where they may be found quickly, when needed by guests.

When all the family use the same bathroom, each one should have a rack for towels and a special place for the toothbrush and the like, and not use those of another person.

A set of drawers, or a wall closet where individual articles may be kept from the dust, is hygienic as well as convenient.

Once a week, and more often if necessary, put a hot sal-soda solution down the toilet pipe, and when any odor is detected use chloride of lime. Let it remain for half an hour then scour with a small cotton mop as far down as possible. Wash and air the mop and all cloths used in the cleaning.

How to Use a Bathroom. Children should be shown how to use the various appliances. After a bath in the tub, open the valve and as the water runs out, wash along the sides before the scum settles; otherwise there will be a dirty water mark which, if left to dry on, is hard to remove. Rinse and wash all over the tub with clean water and wipe dry.

Have a face cloth and a foot cloth, and always wash and rinse them after using, but your towels may be put into the hamper.

Always wipe the basin even if you have only washed your hands, and if you have been so careless as to slop water all about the marble, wipe it up. A cloth for this work (a small square of grey crash is suitable) should hang near the basin and each person know its purpose.

Always flush the toilet until the water is clear. If flushing is insufficient, as unfortunately it is in some cases, wash off with toilet paper and flush again. Wash your hands always after using the toilet.

Never put into the toilet matches, rags, hair, or anything that cannot be dissolved.

Always air the room before leaving it; put towels in order; remove soiled articles, wash your hands, and in short be sure that you have left no trace of your personal use of the bathroom.

Picking-up and Putting in Order. In addition to the special care in each of the various rooms there is more or less of daily work which is commonly called "picking-up." This work is necessary to the orderly appearance of the house, but it need not be carried to such an extent that the house has no home atmosphere, no indication of being really enjoyed and lived in, instead of being in order for company. Order is desirable but there are times when disorder is unavoidable. There is a disorder of work which differs from the disorder of dirt.

School children may help in the home by "picking-up" and keeping their books, toys, and clothing in the places where they belong; and nothing will help them more in forming orderly habits than to have special places given them. They should hang up outer garments when they come in from school or play and arrange their clothing neatly at night that it may be found quickly.

CHAPTER IV

HOUSE CLEANING

To Clean Paint. Provide a basin of warm soapy water, another of clear water, a soft flannel cloth for rubbing, a piece of old underwear for rinsing, and a large piece of old cotton cloth for drying; also a small paint brush and a skewer or ice pick for use in the corners of the room.

Wet the flannel cloth in the warm water, wring dry enough not to drip, rub on whiting or mineral soap and wash the soiled surface, using the brush and pick in the corners. Wash off with the other cloth, wet in the rinse water; then with the cotton cloth rub hard until dry. Wash the scouring cloth after all of its surface has been used and take fresh water as soon as the first is no longer suitable. Do not clean with dirty water.

To Clean with Kerosene. Moisten a cleaning cloth slightly with kerosene and rub the paint until clean; then wipe dry with another cloth, and keep the windows open until the odor is gone.

When doing the frequent cleaning of window sills and finger marks on doors, go over all the places with the scouring cloth, then with the rinsing and then with the drying; but when cleaning an entire room clean the portion within reach and rinse and dry each part as you go on.

Daily Care of Floor. If hot grease is spilled on the floor, pour cold water on it; this will harden the grease and prevent its spreading and much of it may be scraped off; or cover the spot with starch, borax, or powdered chalk, as this will absorb the grease. After a time wash it with soapy water and if it shows again, repeat the process.

Wipe up at once anything that is spilled and brush up any crumbs of food before they are tracked around the room.

Be careful when opening packages from the market that not even a pin head of fat meat is dropped. A tiny crumb of mutton fat, if stepped on, will leave grease spots wherever tracked.

Care of Floors. Hard wood floors finished with oil may be cleaned with kerosene. Use a small cloth slightly moistened for the corners and edges and help out with a skewer; then take a large mop cloth for the center and use it on a long or short mop-handle, as preferred. When clean, rub dry with another cloth. As often as needed give it a hard rubbing with a cloth wet with floor oil.

Soft Wood Floors. These usually need soft soap and sand or some mineral soap. Some persons find it easier to scrub with a regular floor brush while on their knees and others prefer a long-handled scrubbing brush and a mop.

Rub soap and sand on the grease spots first; then begin in a corner farthest from the sink; dip brush into the soap and sand, or rub sand soap on the brush and scrub as far as you can reach, back and forth the long way of the boards; rinse off with a cloth wrung out of clear water; rinse the cloth; wring dry, and wipe thoroughly. Change the water frequently and use as little as possible, — never deluge the floor with water. If dirty water is used it fills the cracks and is difficult to remove. Work toward the sink that the space in front may be the last part cleaned.

Sometimes it is easier to go over the whole floor with the long-handled scrubbing brush, then with the rinsing mop, and then with the dry mop.

When the work is done, wash and rinse the brush and the cloths. Stand the brush, bristles down, to dry.

Do not use a corn broom on a varnished or polished floor; — it scratches the surface. Use a floor mop of twine or soft cloth; or put a cotton flannel bag over a common broom.

To Clean Windows, Mirrors, and Picture Glass. For daily dusting or dry cleansing, first wipe off dust from the frames, then with a clean cloth rub the glass, up and down and from side to side, in overlapping strokes, that every inch may be clean. Do not rub round and round. Go well into the

corners with a skewer under the cloth. This will answer also for windows, on days crowded with other work.

For **washing windows**, provide hot ammonia water and a pan of clear hot water, two wash cloths, and a clean drying cloth. Do not use soap. Wipe off the dust; wash first with the ammonia water and then with the clean, hot-water cloth; rub dry with the soft drying cloth, as directed for dry cleaning. Do not wash windows when the sun shines on them, as they will look streaky.

When windows are very grimy outside, as after a rain, use whiting, or similar material, which will not scratch the glass. Wipe off the grit with a cloth or brush. Rub a wet cloth all over with the whiting until it is full of suds, and wash thoroughly, doing two or three windows, as it must dry slightly before the glass is wiped. Do not get the suds on the woodwork. Wipe until dry and clear, and if any streaks show on the frame wipe them off with a damp cloth.

School children should not be required to wash windows on the outside except where they may reach them easily from piazzas, or a short step ladder, or by standing on some secure projection under an upper window. To stand inside and reach over and down, or to sit on the window sill with the back outside is dangerous for any girl or woman, except those accustomed to such work.

Women who are exacting about out door dirt on the outside of windows, often fail to notice half washed dishes, or untidy bathrooms. Lack of care about food, and any trace of dirty finger marks, or other personal uncleanness, are more objectionable than rain streaked windows.

CHAPTER V

DISH WASHING

Cooking Dishes. When preparing a meal use as few dishes as possible; wash a cup or spoon instead of taking another. Always wipe a Dover egg beater, can opener, or other small cooking tool, with a damp cloth; wipe dry, and put away as soon as used, for if put into the dish water the oil is soon washed out.

Wash a glass lemon-squeezer at once with a small paint brush.

Soak mixing-bowls and milk-jars in cold water.

Put supplies in their places and clean up as you work.

Wash in hot soapy water bread, cake, and muffin pans after every using. Do not try to save work by wiping them out with a dry cloth or paper instead of washing; they soon become rancid if not scalded, and the under-crust will betray your negligence.

Tables, Shelves, Bread-boards, and Woodenware. Scrape off the dough and crumbs; dip a brush slightly in warm water; rub on sand soap and rub hard with the brush, always with the grain of the wood, and hardest where there are grease spots. Clean dough from cracks with a skewer or old knife. Do not let the water run over the edge but be careful to wash the edges. When clean, wash with a cloth in clear cold water, rinse off, and wipe dry. Wash the cloth and brush and leave brush, bristles down, to dry. Always wash bread and meat boards on the table where they have been used. They are awkward to handle in a sink and if left in an iron sink they will be blackened by the iron. Stand them on edge until perfectly dry.

Before serving the meal, have a covered, granite pail or

pan large enough for your need near the sink ready for refuse and table scraps, a tin pail for hot fat to be used as dripping, and another for soap grease. As soon as meat or fried food is dished, pour off the fat while hot, and fill the pan with hot soapy water. Fill vegetable boilers and saucepans with cold water and keep them cold. Do not set either on the stove to dry on around the edges.

Have coarse crash-towels and holders for oven use and never use the dish towels for that purpose.

When broiling or baking meat, spread a newspaper on the floor to catch any grease that may spatter about. Keep near but not under the sink a floor cloth ready for instant use when anything is spilled on the floor.

After dishing food leave the work table and sink in order, with room for the table dishes when the meal is finished.

If you have no hot water in the sink see that kettles are filled and heating.

Clearing Dining Table. In clearing the dining table, form the habit of placing the dishes at once where they belong, and save moving them twice. It takes but an instant to put the silver into a granite pitcher or quart-measure, the scraps into the pan, the soiled dishes of a kind together, and dishes with good food remnants by themselves. Finish clearing the table and put the dining room in order before you begin the washing.

Care of Left-overs. Put good food left-overs into small dishes kept for this purpose, and set them in the refrigerator or their proper place; put useless scraps into the refuse pan; empty tea and coffee pots into a strainer, also any cups, plates, sauce dishes, stewpans and boilers with liquid remnants, and thus avoid having to remove crumbs from the sink. Rinse and pile in order.

Preliminary Work. Soak in cold water any dishes that have milk, acid, egg or dough adhering, and in very hot soapy water any with sugar, gelatine, or grease, especially mutton fat; even after scraping or wiping with soft paper, a film of mutton fat remains which only boiling hot suds will remove.

When the dishes are all arranged compactly, wash off the

shelf and table that they may be ready for the clean dishes. Form the habit of working in this way instead of piling the dishes in the dish pan, working in a clutter, going with dripping hands from sink to closet and mixing clean and unclean dishes all over the place.

Have ready, in the sink or on the table, a dish pan, a rinsing pan, good soap (not strong washing soap) in a shaker, dish-cloths, towels, and a tray on which to take away the clean dishes. Cover the tray with a clean paper or towel.

As the dishes are held in the left hand it is more natural to have the soiled dishes at the left and the rinsing pan at the right, but the position of the sink and closet must decide that matter.

When one person does the entire work the process differs from that when one washes and another wipes. In the latter case have the rinsing pan half full of hot water, rinse each piece as it is washed and put into the drainer. When working alone, it is easier to stack the dishes as washed in the empty rinse pan, and when all of a kind are washed or the pan is filled, pour hot water over and wipe them while other dishes are soaking.

TABLE WARE

Glass, Silver, and China. It is unwise in washing to use water so hot that it hurts the hands. A dish mop answers for some things, but there is nothing like the sense of touch to make dishes clean. The rinsing water may be much hotter for the dishes which need great heat. Do not have the pan too full at first nor use much soap. Begin with about two inches of hot water and shake the soap-shaker in it until you have a slight lather. Never leave soap in the water; if you have no shaker rub a little soap on the cloth.

Take glasses one at a time and roll them sideways in the water, that the outside and inside may take the heat equally and thus avoid cracking.

Wipe glass at once for if it is drained, it will be streaky and have to be rinsed. Use a soft brush for deeply grooved glass. Handle cut-glass with special care, and do not have the water hot, or hit the glass against the pan.

Silver. Stand a pitcher in the rinsing pan. Wash each piece of silver, taking special care with fork tines; put them handles up into the pitcher; scald with slightly soapy water, and wipe dry at once; — being in the pitcher enables them to be taken up easily.

Glass and silver look brighter if wiped quickly from hot slightly soapy water, than if rinsed. There will be no taste of the soap if done as directed, but some persons prefer to rinse them.

China. Add more hot water, using that from the pitcher and rinsing pan, and a little more soap. By this time your hands will bear the hotter water. Wash the less soiled dishes first, usually in this order; — cups, saucers, pitchers, covers, plates, platters, etc. Stand them around the pitcher in the rinsing pan, not with the idea of draining them, but to rinse the part that has been used, the inside as well as the outside. The pitcher will keep small pieces from sliding. Do not crowd the dishes. Rinse and wipe as soon as the pan is full. While wiping cups, etc., let the plates soak. Change the dish water as often as needed, having it hotter but just as clean for the last as for the first. Put the dishes on the tray as wiped.

When all are dry, wipe your hands and take the dishes to their places.

CLEANING METALS

Pots and Pans. If the sink space be limited, and cooking utensils are in the way, wash these first. This method leaves the hands in better condition than when such dishes are washed last.

Do not spend time scouring pans where food has burned on; fill the pan with cold water, add a tablespoon of washing soda, and boil briskly for half an hour. If after a slight scraping with a brass scraper, the scorch does not come off, boil again in sal-soda-water, — soaking does not help, boiling seems to be necessary.

Kettles that are used directly over a wood fire and blackened with soot should be rubbed off with crumpled newspaper and then with an old cloth.

Do not be afraid to use a clean, dry towel for wiping such dishes, for if they soil the towel they are not clean and need another scouring. It is less work to scald them well and wipe dry at once, than to half do it and depend on the stove heat to finish the drying. Do not burn gas to save a towel.

Many persons who call themselves neat wipe a cooking pan out of greasy dish water with the dish cloth and dry it on the stove. Possibly because from lack of thought the dish water gives out, or they have the habit of leaving these things that need the hottest water until the last.

Do not put anything on a hot stove to dry, for enamel will crack, rosin will ooze out from seams in tin ware, and woodenware will crack or burn. A sunny window is seldom available, but boiling water and dry towels are always at hand, if you plan wisely.

Do not put kettles away until dry and cool; leave them uncovered, with their covers near.

Knives and Forks. Never put steel knives and forks, nor any with wooden handles, nor of ivory or pearl, into the dish water, nor pour hot water over the blades. It is the sudden expansion of the steel from the heat that causes the handles to crack or loosen at the rivet, even though the handles are not in the water. Keep the knife in the left hand and wash it with the cloth; when all are washed, rub sand soap on a damp cloth and rub the blades and tines on each side until bright; then wash as before and rinse in warm water and wipe dry.

Rust spots may be removed with kerosene.

Silver. Use whiting on a cloth dampened in water made soft with ammonia; or use any reliable preparation. Rub the chased portions with a small, soft brush. Let the whiting dry a few minutes; rub briskly with a clean dry cloth and brush; wash thoroughly in hot suds; wipe dry, and polish with chamois.

Occasionally give the silver a sal-soda cleansing, especially that having much chasing.

Brass, Copper, Nickel Plate. Moisten a soft woolen cloth with Putz Pomade and rub briskly. With faucets or stationary articles take an end of the cloth in each hand, bear down

hard and pull it briskly back and forth. The friction does the work more thoroughly than can be done by mere pressure of the hand. When bright, polish with a dry, clean flannel.

Ironware that is not in constant use may be kept from rusting by rubbing all over with oil or lard.

A new iron kettle is generally rusty; grease it thoroughly inside and outside and let it stand two days; then wash it in hot water softened by a teaspoon of washing soda.

Stove. After the dinner work is done wipe the stove with soft newspaper; scrape off the spots; then wash with hot soapy water; wipe dry and give it a daily rub with kerosene.

Zinc. Kerosene is the best cleanser for zinc; rub it hard and use sand soap for any spots; then wipe with a dry cloth.

How to Scour. Use a soft but firm, closely woven cloth, slightly wet, and rub on a generous portion of sand soap. If the cloth drips, the grit dissolves too quickly, and if the meshes are too open, the grit soaks into the cloth, instead of staying where you need it, — between the cloth and pan.

Rub hard back and forth going into all the grooves, corners, seams, spouts, handles, edges, etc., with a dull pointed metal like an oyster opener or an ice pick, under the cloth; for scraping use the brass scraper; it has pointed and rounded corners. Never use a pointed paring-knife for this purpose. Do not forget to scour off the brown stain on the outside of granite saucepans; it is always there, partly from water boiling over and burning on, and partly because you neglect to wipe the water from the outside before putting the pan over the fire. If it is not removed every day and the pan is used again and again, it soon becomes unclean and needs a boiling soda cleansing.

After all the pans are scoured wash them in hot soapy water and rinse with boiling water. Hotter water is needed for rinsing kettles and pans than for table dishes.

Sal-soda Cleansing. Use a boiler or old pan large enough to hold the articles to be cleansed. Put in water enough to cover them and one-fourth pound of sal-soda to each gallon of water. When it boils stand the silver in, so that the pieces will not touch but be covered entirely. After boiling ten minutes remove them and wash in hot suds, while other pieces

are immersed. The discolorations not removed by the soda will yield readily to a slight rubbing with brush or cloth. Scald and wipe dry. The soda will not injure silver and the labor of cleaning is greatly reduced.

Treat in the same way saucepans, pie plates, wire broilers, spiders, and fish pans, whenever they are browned beyond what a slight rubbing will remove.

In using sal-soda, do not put the hands into the solution; use a stick, or long fork or holder in removing pans. Do not use the solution on paint or floors. It takes off the paint and makes floors splinter and turn grey. It is cheaper to use it in the form of sal-soda, than in the many high priced preparations claiming marvellous power, of which soda is the principal ingredient.

CHAPTER VI

CARE OF REFRIGERATOR, PANTRY, AND GARBAGE

Care of Refrigerator. If you have much food to keep, fill the chest with ice and always replenish before it gets low, as much ice is wasted in cooling the chest if it has entirely melted. Plan to give the pipes and ice-tray a thorough cleaning before new ice is put in.

Wipe the shelves every morning; look over the food and plan to use left-overs at the next meal if possible; avoid crowding the shelves with messes. Use small dishes and put things of a kind together. Keep liquids where they may be seen easily. Meat and food needing the greatest cold should be kept on the bottom. A covered stone jar is best for butter and when filling it, cut the butter in shapes for the table. The milk jar should be covered and stand near the ice. Keep drinking water in quart glass-jars near the ice; this is cold enough and much better than to drink ice water. Wash and scald the jars every morning and re-fill during the day when needed.

Do not put hot food into the refrigerator.

Do not put bananas, onions, fish, pine-apples, and other foods with strong odors, inside.

Never put uncooked meat next to the ice. Put it on an agate dish near the ice.

Lettuce, celery, radishes, etc., may be wrapped in a napkin and laid on the ice.

When you go to the refrigerator, work quickly, set out near by all you will need, and always close the door, even though you may have to open it in a few minutes. Save ice in this way by not letting hot air inside, but do not try to save it by

wrapping the ice in a blanket or paper, for the ice must melt if we are to keep the inside of the refrigerator cold.

Once a week remove the tray and strainers under the ice ; wash and scald with a sal-soda solution ; rub the pipe up and down with a wire brush or with a narrow strip of cloth tied on a loop in the end of a stiff wire ; pour the solution down slowly while you rub ; rinse with clear boiling water ; wash and scald the drip pan. No matter how clean you may keep the shelves and walls by the daily wiping, the pipes and pan and ice-tray must have this weekly cleansing to remove the sediment that collects from the melting ice.

Garbage. Keep a tightly covered pail on the sink shelf for use at meal times ; empty it into the outside garbage pail after washing dishes, and wash and scald the pail. Lay a piece of paper in the bottom, letting it come up round the sides, that the contents may slip out easily when emptied.

Wash the outside garbage pail every morning or after collection.

Where gas stoves are used or you have no garden in which to bury refuse, you will have to depend upon a collector. With a wood or coal fire much of the refuse may be consumed in the space between the top of the oven and the middle cover lids. If put in after you are through with baking, it will be quickly converted into ashes. Avoid crowding in much at a time and open the chimney draft. It will not injure the stove if burned at once.

The Sink. Avoid letting any grease, scraps of food, coffee grounds, matches, and the like drop into the sink. Keep the strainer over the waste pipe screwed down, and if you have a brass scraper handy, it is much easier to take scraps up at once and put them into the garbage pan. Do not try to wash them down by flushing with water for they do not belong in the pipe.

Use a cloth for scrubbing the sink ; it is easily kept clean, sweet and dry, but a brush or corn-broom, or rubber-shovel soon become offensive. The brass scraper needs only a little scouring when you clean the brass strainer.

Wash and scrub the sink all over, with hot soapy water ; use sand soap where there is grime or grease ; clean back of

the faucets and pipes, wash front and edges of the sink, rinse thoroughly and flush the pipes with hot water, and then wipe dry.

Towels. Use soft but firm linen crash for towels. Wash them in clean warm water; rub soap on spots; rub until clean and rinse in two waters; wring dry and shake from end and side and hang to dry in the sun, or on towel-bars by an open window. If only slightly wet and not soiled, wash them in clear cold water to remove the dish-rinsing water. Never allow them to dry without this clear-water rinsing if you wish them to be soft and sweet for the next using.

Wash dish cloths in the same way. Use a white dish cloth and keep it white.

A dish towel, worn thin but not in holes, cut in half makes a more satisfactory dish cloth than one knit of cotton yarn which soon becomes stiff and dingy. Have a small towel-rack over the sink-shelf for the dish cloths.

Use a heavier cloth for the sink, for oven towels, and for cleaning; one of soft gray crash is washed easily and is never mistaken for the dish cloth. Never hang a wet sink-cloth, or any cleaning-cloth, in a dark, damp closet under the sink. Wash and dry them and hang them on a rack behind the stove or where they may have air. Such closets should be removed if possible, but if not, keep only dry articles in them.

Do not use ragged or linty cloths. They catch in the edges, clog the drain pipes, and make extra work. Oven towels are better than holders for lifting out heavy pans.

Floor Cloths. A floor cloth of dark soft gingham, or something unlike the towels should hang under the sink-shelf where it may be caught up quickly when wiping up is necessary. A floor pan or pail should also be near at hand.

Wasting Water. Even if you have running hot and cold water in the sink, it is better not to waste it but learn how to do good work with a small amount. There are many places where water must be drawn or brought from a distance, and the best of supplies sometimes runs low.

By a little forethought the same water may be used for soaking many dishes; careful scraping makes soaking unnec-

essary, and by keeping the rinsing-water-pan hot, a little water may be made as effectual as a large amount.

If obliged to use an iron sink, wash and wipe dry and rub all over with a thick cloth dampened with kerosene. This will prevent rusting. Keep this cloth in a covered tin pail.

When the work is all done, pour a boiling hot solution of sal-soda down the waste pipe; this will melt the grease that may have adhered to the pipe, and carry it off, if you remember to follow the soda with a plenty of boiling water; otherwise the soda and grease will unite and fill the pipes with soap. Use one-fourth cup of soda to one quart of boiling water.

Once a week put a cup of chloride of lime into two quarts of boiling water and turn down the sink; this will disinfect as well as cleanse the pipe. When flushing the pipe fill a pail with hot water and pour it all at once.

CHAPTER VII

WASHING CLOTHES

Washing. Detailed directions for doing the family washing and ironing are not practical in elementary classes, but in connection with the lessons in cleaning girls may learn the general principles of washing clothes.

Towels are a type of articles only slightly soiled; dust cloths a type of street-dirt soiling.

The order of work and how to remove stains may be given briefly.

Sorting is first in order. Articles to be repaired, or to have special treatment are laid aside.

Fine white waists, laces, and handkerchiefs only slightly soiled, — soak in an enamelled pan in warm white soap-suds and later rub with the hands.

Handkerchiefs soiled from colds and coughs should be soaked in salt water; change water several times, and later wash and boil in a pail for half an hour.

Put articles of a kind together in this order:

Table linen and fine towels.

Bed linen.

Fine body linen.

Soiled body linen.

Woven cotton underwear.

Coarse towels.

Colored garments.

Kitchen aprons.

Woolens.

Colored hosiery.

Lay aside stained articles from each pile and treat as directed under “stains” and such as need to be soaked as follows.

How to Soak Clothes. Do not soak all soiled articles, even from the same pile, together. This is a common practice but it has many objections.

All underwear with grimy hems, and mud or street dirt, put to soak singly in a pail of warm suds. Long skirts, — put only the soiled part into the pan; let the top of the skirt hang over. Swish about with a clothes' stick; lift to avoid getting your hands in muddy water; make a fresh suds and repeat until the water is nearly clear. Then soap the soiled places and let them soak in the tub while you wash the soiled articles.

Wash woolens in fresh warm suds and rinse in clear warm water. Do not rub the soap on the material, — dissolve it.

Colored Hosiery. Wash in clean water for if they are washed in the rinsing suds, they will be streaked with lint. Boiling is unnecessary except for linen used in illness.

Rinse clothes in clear water; and again if any trace of soap be left.

Always shake out each piece before putting into the bluing water, and put in only a few, — then wring dry; shake well, — snap hard any fringed towels; hang on the line in an orderly way, the clothes of a kind together, and where corners will not be soiled.

To Remove Stains:

Fruits, Tea, and Coffee. Lay the stained part over a bowl, and pour boiling water slowly on the stain.

Spots on the Table Cloth. Before removing the cloth, slip a large platter under the spot; pour on a little water, hot or cold according to the stain; rub slightly with a bit of soft linen. When clean, remove platter; slip several folds of clean cloth under the wet part, and rub with a clean towel until dry. By this method the cloth will not be tumbled and may be put away when dry.

Cocoa and Chocolate Stains. Soak the spot in cold water fifteen minutes, and if the spot has not disappeared change the water and soak again; then pour boiling water over the stain.

Iron Rust. Wet the spot; apply salt and lemon juice, and put in a sunny place to dry.

To Wash Dust Cloths, Mops, and Floor Cloths. Make a strong soapsuds, or sal-soda solution; put in the cloths, and poke them around with a stick for five minutes. Lift them out; pour off the water; make another suds, and continue this until no more loose dirt comes out into the water. Do not put the hands into the water, until it is nearly clear; then soap well and let the cloths soak until ready to rub them clean. Rinse, shake, and dry quickly. After once trying this method you will see how useless it is to soak cloths in dirty water; the cloth only absorbs the dirt again, and is harder to make clean.

CHAPTER VIII

HEAT AND FUEL

SECTION I

Heat

Artificial heat for household purposes is obtained by rapid combustion, or the chemical union of the oxygen in the air with the carbon and hydrogen found in fuel.

Hydrogen is a gas, and is the lightest substance known.

It is seldom found free in nature, but its compounds are everywhere. Combined with oxygen it forms water and in this form it is found in all animal and vegetable substances. Pure hydrogen burns instantly in the air when lighted and produces intense heat, and the result of the burning is water-vapor.

The principal fuels used in household heating are wood, charcoal, anthracite and bituminous coals, kerosene oil, and gas, all composed of either carbon, or compounds of carbon with hydrogen, forming hydro-carbons. Sometimes they contain both.

All these varieties of fuel were originally derived from vegetable matter. The living tree or plant, through its leaves and roots, takes in from the air and soil carbon dioxide and water, with earthy and nitrogenous matter dissolved in the water. It gives back to the air a large part of the oxygen contained in the gas, but retains some of it, and especially retains much of the carbon and water. Upon these it lives, and from these, with the help of the sunlight, it constructs the woody fibre, sap, and other substances, — compounds which are rich in carbon. Since

these compounds have been built up by the energy of the sunlight, and can unite with oxygen, they are readily combustible. When we burn them in the form of wood, oil, fat, etc., this energy is liberated, or set free, as heat, or light, or both. By heat, which represents a certain amount of energy, we are enabled to have work done: on a large scale, when we burn coal under an engine, and on a small scale when we burn it in our stoves, and use the heat to cook our food. Artificial heat may thus be traced to the sunlight, the chief source, also, of all natural heat.

SECTION II

Fuel

Wood is a product of vegetable growth, found in the trunks and branches of trees. It contains hydro-carbons in a solid form and consists of slender fibres or tubes closely packed together. When first formed these are hollow, and contain the sap or vegetable juices; but gradually they become hardened and consolidated, and by their successive layers or rings indicate the age of the tree.

Some of the hard woods are oak, hickory, and maple; soft woods are pine, spruce, and cedar.

The fibres in hard woods are more densely packed and are of a purer quality than those in soft woods. When freshly cut, wood contains a large amount of water or sap, and soft wood contains more than hard. On exposure to the air this water is lost by evaporation. Wood should be well dried to be useful and economical as fuel.

Charcoal is obtained by heating wood in close vessels, or in covered pits, with a limited supply of air, — enough to decompose the wood, but not enough to consume, or entirely burn it, — a kind of partial or half-smothered burning. The gaseous elements in the wood are expelled, and the coal or charred wood that remains is nearly pure carbon.

Anthracite coal is 90 to 98 per cent carbon. It is found in immense layers, deeply imbedded in various parts of the

earth's crust. Ages ago the vast forests and luxuriant forms of vegetation were submerged; and by the action of pressure, heat, and other causes they have been changed to their present form of coal. The gaseous substances have nearly all been expelled and the carbon that remains forms the hardest kind of coal.

This is also known as hard coal and has a glossy black color. Anthracite coal is sometimes named from the place where it is mined, but there are only two varieties, — the red ash and the white ash. The red ash burns more freely than the white ash, and although it costs more it is better for cooking purposes. Coal of a dull slaty color often contains pieces of slate and other incombustible compounds.

Bituminous Coal, so called from the bitumen or pitch which it contains, is derived from other forms of vegetation which were buried and had less charring than the hard coal, and much of the hydrogen or gaseous element remains. It is more abundant than hard coal and therefore cheaper.

Illuminating Gas is made by distilling or heating bituminous coal with entire exclusion of air. **Water Gas** is made by passing steam through heated coal.

Coke is the black, porous mass left after the volatile gases have been driven off from certain kinds of coal and is nearly pure carbon. As it burns out quickly, coke fires need frequent replenishing; but it is light, easy to handle, and does not smoke.

Petroleum, from which kerosene oil is made, contains liquid compounds of hydrogen and carbon, and is obtained from wells in the bituminous coal regions. Its location is often discovered by finding the coal oil oozing from crevices in the rocks. The petroleum goes through various refining processes, and when of the best quality it is nearly colorless.

We burn fuel on a small scale in candles, gas, and oil in lamps to secure the light from the flame.

We burn it on a large scale in stoves and furnaces to obtain heat to warm our houses and to cook our food.

Carbon is the chief element in all these forms of fuel. In burning, the oxygen unites with the carbon and hydrogen, forming, with the carbon, carbon dioxide gas, and

with the hydrogen, watery vapor. Both escape into the air, and the gas is absorbed by plants. Some of the carbon is not consumed, and passes off as smoke.

The Heating Power of Fuels. Wood charcoal, being light and porous, ignites readily, burns rapidly with little or no flame, and gives out more heat than an equal weight of any other fuel.

Anthracite coal is next in heating power. Owing to its density it kindles slowly, but when once thoroughly ignited it burns with an intense heat, without flame, smoke, or soot, and for a long time.

Bituminous coal ignites readily, burns with much flame and smoke, but yields less heat than anthracite.

Soft woods kindle quickly, burn with much flame, produce intense heat, go out quickly, and leave but few coals.

Hard woods kindle and burn slowly, with less flame, but afford a large mass of coals, which retain the heat a long time.

It has been estimated that 1000 ft. of gas equals from 50 to 60 lbs. of coal or about $4\frac{1}{2}$ gallons of kerosene. (A common coal hod holds nearly 30 lbs.) Half a ton of coal equals a cord of wood.

CHAPTER IX

FIRES

The carbon and hydro-carbons in fuel will not burn or unite with oxygen and produce rapid combustion except at a very high temperature, — that is, when made very hot. The temperature at which this union takes place is called the burning-point. This varies in different substances, and kindling means must be employed to produce it.

Some substances, like the phosphorus on matches, will burn very easily when heated by friction. The phosphorus ignites the sulphur, and the burning sulphur makes the wood hot enough to burn, and thus we have a little fire.

The match burns with a bright flame because the wood has first been decomposed by the heat, gases are formed and the burning of these gases and not of the solid wood produces the flame. Any fuel that burns with a flame must be at that moment in a gaseous state.

In burning gas we simply apply a lighted match, — it instantly heats the gas to its kindling point and we have a bright flame.

We light the wick in a candle and at first it burns slowly, the wax or tallow in the candle must first melt, be absorbed by the wick, change to a vapor and when the vapor is heated to its kindling point it burns with a clear flame. If we hold the burning match near large pieces of hard wood or coal it will not make them burn, because the match will burn out before they are hot enough to take fire. But if we place paper or shavings and a pile of small pieces of soft wood under the hard wood, and apply the lighted match to the paper, we soon have a bright flame. The burning shav-

ings heat and kindle the soft wood ; this in turn kindles the hard wood and coal and in this way we make our fires.

Hard coal is made up almost entirely of solid carbon, which no furnace heat can change into gas. As there are no gases first made by the heat, so there can be no flame produced in the burning. Hard coal burns with a steady glow without flame, provided there is plenty of air to burn the carbon ; but when the coal is densely packed in the grate and the supply of air is insufficient, a poisonous gas is formed which burns with a blue flame. It disappears when the coal burns freely. This gas is known as monoxide.

When a fuel burns freely the air above it becomes heated, is lighter and rises, making the flame stream upward. Cold air rushes in to take its place and this in turn becomes heated and rises. This current of air is called a draft. In order to regulate the amount of air that rushes in, and utilize the heat from the fire, the burning fuel is confined within narrow walls thus shutting off the supply of air from the sides and admitting it only from below. There is an opening at the upper end for the heated air and smoke to escape. If both of these openings are closed the fire goes out, for no more oxygen is supplied.

But when there is a proper supply of air the fuel will burn until it is nearly consumed. The smoke and other products of combustion escape through the opening above the fire ; by means of a pipe they are drawn into the chimney flue and thence into the air outside.

The products of combustion are gases, vapor, smoke, and soot.

Carbon monoxide is the gas that is formed when combustion is not complete ; it burns near the fuel with a blue flame and is poisonous.

Carbon dioxide is invisible, the product of complete combustion.

Smoke is made up of tiny particles of fuel only partly burned that escape with the vapor in the draft up the chimney.

Soot is formed from the burning of wood and soft coals which contain oily compounds ; these unite with the unburned bits and cling to the bottom of kettles and to the flues.

Ashes. In wood and coal there is a small amount of mineral matter; it will not burn and in the process of combustion is left as ashes. These settle under the fire and if allowed to accumulate and prevent the entrance of air, they hinder the burning.

CHAPTER X

COOKING BY GAS

Gas is now in general use for cooking purposes wherever artificial or natural gas may be obtained. It saves the labor and dirt of wood, coal, and ashes, and the time required to build and care for a fire. It is a clean fuel, and if the stove is well made and properly connected with the flue, the burners kept clean, and the valves shut tight when not in use, there will be no odor of gas. Whether it is an economical fuel or not depends upon the one who uses it, and also on the price of gas, as this varies in different places.

Gas Stoves are found in all sizes and styles, some being fitted for every kind of work.

Gas Plates with one or two burners are used on a table or shelf and are connected directly with the main supply pipe, or by a flexible tubing of a length which permits change of position.

The Gas Range in general use stands on the floor, which should be protected by zinc. It is connected with the flue by a pipe, has from four to six burners on the top, and two ovens below, the lower one used for roasting, broiling, and toasting. The range should stand on blocks if not high enough to use without stooping.

The modern range has the oven and broiling burners at the side, and this is an advantage for thus the process of cooking may be seen easily. The hot closet and shelf for utensils are below.

Some stoves have a top similar to that of a coal range, or half of the covers are solid instead of open around the burners. These covers radiate the heat and two or three stewpans may be used over one burner, thereby saving gas. They are

convenient for flat irons, and the top being level there is no danger of pans tipping over.

Parts of a Gas Stove. In using a gas stove become familiar with every part of it. Locate the supply pipe leading from the main pipe, the shut off, the ovens, the pilot light and other oven burners, the iron drip sheet under the top, and the valves for each burner.

Some valves or stop cocks are circular and turn over to the right and left; others have a long knob or handle which opens out in a straight line with the burner pipe to admit the gas, and turns at right angles to shut it off. One can tell at a glance whether these valves are open or closed.

Lighting the Top Burners. If the gas has been shut off entirely from the range, open the valve in the connecting pipe, — usually when open it is in a line with the pipe. See that all the valves are tight, light the match, open the valve to be used, let the gas run a second, then apply the lighted match at the top of the burner. If it pops and goes out, or “burns back” with a roaring noise and you see flame in the air hole near the valve, the match was applied before sufficient gas had flowed; turn it out and light again.

Lighting Oven Burners. Always open both doors before lighting the pilot, as gas sometimes collects under the oven if it is turned on too long before applying the match, as is often the case when the first match goes out. If this gas is lighted suddenly in the confined space there is danger of explosion. Leaving the door open five minutes dries out any moisture that may have collected there.

Open the pilot valve and light it through the hole in the side of the stove; this flame acts as a taper and as soon as you open the valves lights the burners with a slight explosive sound. When both are burning freely with a blue flame turn off the pilot light.

When using the lower oven for toasting or broiling, heat the oven well with closed doors, then put in the food and leave the door open that air may be admitted, for it is the oxygen in the air which causes the difference between the browning of broiling and that of baking by confined heat.

Economical Use of Gas. The gas should always burn with a blue, not a yellow flame. The yellow indicates that the flame is too high or the burner is clogged and the supply of air is not sufficient.

Use the full flame only to start water boiling quickly, or for quick heating of the oven. As soon as the water boils turn the gas as low as can be without checking the boiling, and then regulate it as needed. Only a few foods need brisk boiling.

If kettles are too full, or the flame too high, the contents boil over and clog the burners, cause a disagreeable odor and much extra work.

When a hot oven is needed quickly leave the full flame on for ten minutes that you may have the heat radiated from the hot iron of the oven which helps in top browning; then reduce the heat, sometimes by turning off the back burner entirely. Five minutes before removing the food turn off all heat.

Amount of Gas Consumed. When burners are turned on full, each top burner consumes about two cubic feet per hour; the simmering burner somewhat less, and the oven burners from thirty to forty cubic feet per hour.

By using a portable oven over the top burners (either one or two of them according to the size), much of the baking may be done there with quite a saving of gas and heat. When not using a burner turn the gas out; matches are cheaper than gas.

To Clean the Gas Range. The burners have holes in the supply pipe to admit air and these should always be free from dirt, dust, and grease. In many modern stoves the burners may be taken apart when cleaning is needed. Dissolve two tablespoons of washing soda in two gallons of water and boil the burners in this solution for ten minutes; use it also for washing the drip sheet, which should be cleaned every day, as well as the racks in the broiling oven. Anything that may have cooked over in the baking oven should be scraped off. Never blacken the burners, for it is not necessary to blacken any part; wash the stove with kerosene, or with a cloth slightly greased and this will remove the rust.

CHAPTER XI

STOVES AND RANGES

A fire for cooking purposes is best made in an iron box, or, as it is usually called, a stove, or range. By so doing we confine the heated air within a certain space, and can obtain more or less heat, as may be required. By means of a pipe we connect the stove with a chimney having an opening into the outer air. The ashes drop through a grate in the bottom of the fire-box into the hod or pan beneath. We control the amount of heat obtained from the fire by dampers in the stove and pipe. These increase or diminish the supply of fresh air, regulate the circulation of hot air through the flues of the stove, and afford an outlet for the imperfectly burned carbon and products of combustion.

Through ignorant or careless management of a fire, much fuel is wasted, health is impaired, and often human lives are sacrificed. Charcoal and anthracite coal should not be burned in close rooms, especially in open stoves, with the pipe dampers closed, or where there is a poor draught in the chimney. Poisonous gases are formed, which if inhaled, cause death by suffocation. It is, therefore, a matter of vital importance that we so regulate our fires and ventilate our rooms that the air may not be impregnated with these deadly gases.

THE MAKING AND CARE OF A FIRE

Remove the covers, and brush the ashes from inside the top of the stove into the fire-box. Leave a thin layer of ash on top of the oven to help keep the heat within. Replace the covers, close the dampers, and turn over the grate. Shake the

lower grate, letting the ashes sift through into the ash-pan. When the dust ceases to rise, brush out the oven, remove the cinders from the lower grate, and reserve them to burn again. When taken out in this way, the ashes in the pan will not require sifting. If there be no lower grate, remove the ashes and cinders together, and sift them. Pick over the cinders carefully, and throw out any stones, slaty pieces, or bits of clinker. These should never be burned, as they injure the lining of the fire-box; but any pieces of half-burned coal should be saved. Always take out the ashes before lighting the fire, for if they are left in the pan, sparks and lighted coals will drop into them. It is then highly imprudent to remove them, unless they are to be placed in a fire-proof ash receiver. Fires have often been occasioned by careless storing of hot ashes.

Put into the fire-box, first, shavings or loose rolls of newspaper, letting them come close to the front; then fine pine kindlings, arranged crosswise, that the air may circulate freely between the pieces; be careful to have them touch each end of the fire-box that the coal may not drop through to the grate. Then put on enough hard wood, arranged in the same manner, to come nearly to the top of the fire-box. Put on the covers, open the dampers, and brush the dust off the stove.

Moisten some stove-polish with cold water, and put it on the stove with the "dauber." Rub the blacking in thoroughly, then light the paper from below the grate, and while the fire is kindling polish the stove with the dry polishing brush. Blacken the stove while it is cold, but polish as it begins to heat.

When the wood is well kindled, put in a few more pieces of hard wood, and press the coals down to the grate. Put on coal enough to cover the wood, and when this has kindled fill the fire-box to the top of the lining. By making sure that the hard wood kindles first, and adding the coal gradually, much trouble is saved; for unless the kindling be well seasoned, part hard wood, and plenty used, it will either not kindle or will burn out before the hard coal kindles, and then the coal must be removed and the fire rebuilt,

The blazing heat from the wood alone warms the stove, and the oven quickly becomes hot. If you have charcoal or Franklin coal, it may be put on at first with the wood.

When the blue flame is no longer seen, close the oven damper; and as soon as the coal is burning freely, shut the front damper. Then regulate the fire by the slide or damper in the pipe.

While making and watching the fire, empty the tea-kettle, wipe out the inside, fill it and the reservoir with fresh water, — never from the hot-water tank, — finish polishing the sides and back of the range, and brush up the hearth and floor.

When a hot fire is needed for several hours, add a sprinkling of new coal before the first has burned out, and add to it often enough to keep the fire at a uniform heat. Be careful not to cover and thus check the fire, and never have the coal above the top of the lining.

When the fire is not needed for the present, add a little fresh coal, and close all the dampers in two or three minutes, or as soon as the blue flame disappears. Never shut off all the draught on a red-hot fire without putting on a little fresh coal, if you wish to keep it in good condition to use again. It is important to remember that when all the coals are red they are nearly burned out, and will not give out heat for so long a time as when partly black and partly red.

To quicken an old fire, open all the dampers; and if the coal is black or only partly burned on top, pick out the ashes underneath with the poker, and when it begins to burn more freely add a sprinkling of coal and shake the grate. Keep the grate free from ashes when a very hot oven is needed. But if the old fire has burned so low that all the coals look red or ashy, always put a few pieces of small coal on the red coals, and when these are burning add carefully a few more; then shake the grate gently, or pick out the ashes. If you shake a dying fire, the ashes fly up and settle on the coals and put out the little life there is in them.

During cold weather, or when a fire is required for heating purposes as well as for cooking, it is more economical, with most first-class stoves, to keep the fire night and day,

letting it go out occasionally should the grate become clogged. But when it is no longer wanted for either purpose, turn the grate over at once that there may be no unnecessary burning of the coal.

Once a month clean out the ashes and soot from the flues back of the oven and under it. There are openings made for that purpose.

When anything is spilled on a hot stove, scrape off the thickest part of it at once with an old knife, and wipe off the grease by rubbing hard with a crumpled newspaper.

CHAPTER XII

WOOD FIRES

Cooking by Wood Fire. In many country places wood is the chief fuel for cooking, especially in the summer. There should be a full supply of well-dried wood ; pine or soft wood, split fine for kindling, with chips, pine cones, and any other small portions you may happen to have convenient ; light trash wood for a quick fire, and oak or other hard wood, cut a little shorter than the fire box and of varied thickness, for a long steady fire.

One of the most helpful ways for the boys to combine home work and school credits is to see that the wood supply is perfect.

Follow the directions for kindling a coal fire, using the hard wood instead of coal. For quick boiling and other top-of-stove cooking, have the front dampers open and when the fire burns freely close the pipe damper that the heat may go round the oven. Fill the fire box full, using light and hard wood not too closely packed, and when burning freely and the top of the stove is hot, close the dampers and regulate as needed for the oven.

Use flat-bottomed, enamelled stew pans, which may be moved over any part of the stove, and do not set them down right over the blaze. You will soon learn by experience the hottest places. With a good body of fuel and drafts right, the whole stove is heated enough to do an hour's work on it. If you start with only a few sticks and add a little every few minutes you will waste the heat and must give the fire your whole attention. If pans are directly over the fire they become blackened with soot, interfere with the wood, and

often do not cook as quickly as if placed on the hot iron. Use the door at the end when more wood is needed.

When the fuel is right and the fire managed correctly, a meal may be prepared with as little trouble as with a coal fire ; and by the time the vegetables are done you will have a bed of good hard-wood coals for broiling.

If the fire is needed only for heat, fill the fire box, shut all the dampers and it will burn slowly like the old-time parlor airtight stoves. A portion of green wood may be used now to advantage.

CHAPTER XIII

THE FIRELESS COOKER

This is a modern application of the same principle that is used in the Norwegian Hay Box, also in the brick oven near the chimney, and to go still further back, the out-door oven of primitive peoples, and the hot stones in a hole in the ground.

Stoves and ranges radiate a great amount of heat far away from the food which is being cooked and this heat is wasted. Fires that are not regulated become too hot and food burns, or they go out before food is done.

Time and attention are needed to keep the fire and a large amount of fuel must be used if cooking is prolonged.

Many of these disadvantages may be overcome by using the fireless cooker, especially a late and improved form of it, as a part of a well-designed gas range.

A common form of the cooker, which may be made at little expense, is a box several inches larger all round than the kettle in which the food is to be placed. Two kettles may be used if needed. The bottom of the box is lined three or four inches deep with some non-conducting material, such as hay, excelsior, sawdust, ground cork, newspapers, wool or cotton batting.

A frame of heavy cardboard or asbestos is made to fit around the kettles and fastened in place, and the space around filled in closely with the packing. A cushion four inches thick filled with packing and fitting the top of the box is laid on the top after the kettles are in place, and the box cover fits closely over the whole.

The modern cookers have places for two or more kettles,

the packing is closely covered and it is but little work to adjust the kettles to their places. Iron plates or discs are heated and placed above and below the kettle to increase the heat, and all the space is filled perfectly with the best non-conductors. Home-made cookers have some disadvantages. The packing absorbs odors, moisture collects in seams of kettles and they rust. In buying a cooker choose one without seams in the linings and the kettles.

All foods are first cooked on the stove from 10 to 30 minutes, or until hot all through and then placed in the cooker tightly covered and left for the required time. Only a little heat can escape, and the heat of the partly cooked food is generally sufficient to finish the cooking without further attention. This long, slow cooking softens the food material and develops flavors not possible in rapid cooking. Foods that require the flavor of browning may be finished in the oven.

The fireless cooker is best adapted for a large amount of food, enough nearly to fill the kettle, as a large amount holds the heat longer than a small amount. Steamed breads, puddings, cereals, stews, beans, soups, large pieces of meat, like ham or poultry, are most suitable for the cooker. Beef, lamb, and chickens, which are usually roasted, may be begun in the cooker and browned in the oven a few minutes before serving. Meat should not be kept in the cooker too long; it spoils at a warm temperature.

The cooker is equally suitable for keeping food cold. After ice cream has been frozen the can may be set in the cooker closely covered, and the cream will keep frozen for some time without ice.

The great merit of the fireless cooker is that it retains heat without any fire, just where it is needed and for a long time, with no attention, leaving the housekeeper free to attend to other occupations.

Where a cooking fire is not needed for warmth it is a great saving of fuel.

Special directions for use will be found in each cooker. When once the principle is understood, ways of adapting it will suggest themselves even if you have no patent cooker. The steam radiator in winter, if you are sure of a steady heat

all day, may be utilized for baked beans, stews, baked apple sauce, rice pudding, and the like. Start them on the stove, after breakfast, cover tightly, set the pan on the radiator, stuff papers all round and cover the whole with blankets, and at supper time you will find the food well cooked.

CHAPTER XIV

OIL STOVES, LAMPS, CHAFING DISHES, AND ELECTRICITY

Kerosene Oil Stoves. Kerosene stoves are comparatively cheap and the oil is not an expensive fuel, but the heat is less intense than that of other fuels and more time is needed for cooking. They are invaluable for summer use where gas or wood is not obtainable. They are heat savers but not labor savers, for they must be watched when in use to prevent smoking and be cleaned thoroughly daily; otherwise the odor will not only be disagreeable, but will vitiate the air. Their great merit is that being portable they may be used wherever it is most convenient and comfortable to work.

The cleaning of an oil stove is not hard, if done regularly and in the most effective way. The new blue-flame stoves are more easily regulated than those of older design, but even these must be kept clean. The oil is fed from a tank outside of the stove into a hollow ring below the burner, and becomes heated sufficiently to vaporize it. This vapor unites with the air and burns with a blue flame. In the older stoves the oil is below the burners and is absorbed by the wick.

The following directions will apply to the cleaning of any stove and also to lamps.

See that the wicks fit well and turn easily. After trimming, light them and trim again if there are any points of flame; round off the corners slightly. When they are once made even, the daily rubbing off of the charred wick will be sufficient.

The burner and cylinder must be kept clean and bright; turn the wick down half an inch, rub sand soap on a bit of soft, firmly-woven cloth and scour off the brown deposit on

the top edge of the burner ; use a small flat-edged skewer under the cloth to clean inside the wick tube.

Wipe off the smoke and soot on the mica, the inside of the cylinder and the perforated plate under the burners. Turn up the wick and wipe off any sand adhering and wipe the whole again with a dry cloth kept for this purpose only.

No matter how thoroughly the stove was cleaned after the last using, if it stands an hour unlighted oil will ooze out, and this should always be wiped off with a dry cloth before lighting. You may not see the oil but it is there ; and it is this imperfectly burning carbon on the burner, or perhaps the pin point of soot in the cylinder that escaped your eye in the cleaning, that causes an odor, even when there is no smoke.

There is more of " don't " than " do " in the use of an oil stove.

Never use oil of a poor quality ; good oil is nearly colorless and flashes, or ignites, at 149° Fah.

Never light the stove until you are sure there is sufficient oil for your work.

Never fill the stove when lighted, or when other lights are near ; morning is the best time.

Never keep the oil-can near the stove, nor use the oil to start a wood or other fire.

Never light the wicks without first wiping off the cylinder and burners.

Never leave the wick high at the first lighting ; though it may not smoke at first, it will as it burns more freely, and especially when the water begins to boil.

Never use an uneven wick ; rub and trim until it is right.

Never leave the stove after lighting until you are sure it is burning as you desire, that no draft can reach it, and that water will not boil over or boil out and food burn. Make assurance doubly sure by looking at the stove frequently.

THE CARE OF LAMPS

Tools. Plan to fill lamps early in the forenoon and if possible on a side table or shelf not used for food.

Protect the table with newspapers and use a metal tray,

covered with paper, to hold the lamps, oil-can, and tools.

Fancy lamps need much care; clean these first and follow the special directions given with each variety of burner, or the general method applicable to all.

Chimneys. Remove the chimney and if smoked, wipe out inside with a soft, crumpled newspaper. Roll it sidewise in hot ammonia water, push the wash cloth round the inside with a long thin stick, unless you have the more convenient utensil made of a long, quarter-inch thick steel wire, doubled and bent over two inches at the top, forming a loop to hold the cloth. The ends of wire are inserted in a handle and the wires will not bend and have no sharp edges or points. The utensil is especially adapted for this work and for milk bottles and fruit jars.

Wash the chimney; rinse in hotter water, and wipe dry with a clean cloth used only for lamp chimneys.

Old soft cotton, or gingham, 18 × 30 inches in size, neatly hemmed to prevent lint and ravelings, makes good chimney towels.

Filling. Remove the cap or burner and fill from a small oil-can, to within an inch from the top. If too full the oil will flow over. Room should be left for the gas that may be generated when the wick is lighted.

Wicks. Screw the cap or the burner on securely, and turn the wick up until you can see all the charred edge; rub it off with soft paper and trim off any points. Do not cut the wick unless it is impossible to make it run evenly. Turning the wick up and down several times will often make it right.

Light the wick, adjust it to the free burning height, then turn it out and trim off any remaining point. Do not leave it until the wick is even, for the smoke from a poorly trimmed lamp is not only annoying but harmful.

Wipe the outside all over with the lamp cloth; stand the lamp on a newspaper and if no mark of oil is left after ten minutes, put the lamp in its place.

Kitchen and bedroom lamps, which are carried about, should have handles and perfectly fitting brass burners of the best quality.

Collect all the lamps that have been used and stand them in a row. Remove all the chimneys and wash and wipe one at a time. Then unscrew all the burners, and with one lifting of the oil-can fill each in turn, holding the burner partly back with the other hand. Screw the burners on and trim the wicks as directed.

Wipe the lamps all over and turn wicks down one-fourth inch; if left up, the oil will run over the tube. Then with clean hands replace the chimneys and put the lamps in a cool, dry place, free from dust. The shelf over the range or hot water pipe is handy, but not desirable on account of heat.

In using lamps turn the wick low after lighting, that the chimney may heat slowly. Gradually increase the flame and watch it until you are sure it will not smoke.

When carrying the lamp about turn the wick down slightly, and also when putting it out. Then blow across the top, not down into the chimney.

When less light is desired, do not turn the wick below the point of perfect combustion, for it will vitiate the air.

Kerosene is cheaper than bad air.

Wash and scald the lamp cloths, wipe scissors and other tools, wash the tray and put all away in the lamp closet. Put the paper into the kindling box.

CHAFING DISHES AND ALCOHOL STOVES

Pure alcohol is an expensive fuel, but it has its advantages, especially when heat for cooking in other ways is not available.

It is a clean fuel with a pleasant odor and its lamps and stoves need but little care. It is especially valuable in the nursery, the sick room, and when travelling.

It is used in chafing dishes and pocket stoves.

Denatured alcohol is used in stoves made especially for it, but it has not come into general use, at least not in America, although the price is much less than that of pure alcohol.

Wood alcohol has a disagreeable odor when burning, and its fumes are irritating to the eyes and throat. If used, label it "Poison."

Directions for use vary with the different chafing dishes, but there are some general principles, applicable to any way of burning alcohol, which it is well to understand.

To avoid danger from fire:

Keep the stove on a metal tray when in use. Be sure that the flame is all out and the lamp cool before re-filling.

Use the regular filler, with a long, high spout, if possible; otherwise fill from a pitcher with a narrow pointed lip, or through a small funnel.

To save alcohol:

Have all utensils and materials at hand, and all combinations made before you fill and light the lamp. Keep the bottle or can tightly covered to prevent evaporation.

Chafing dish pans fit one into the other leaving space for water in the lower pan; there is a cover which will fit either pan.

The upper pan is called the blazer and may be used over boiling water in the lower pan, for the cooking of eggs, milk, cheese, and such foods as need moderate heat, or for keeping cooked foods warm or hot. Either pan may be used directly over the flame for quick cooking, for creamed dishes, left-overs, oysters, sautéing, and foods which need to be served the moment they are done.

Chafing dish cooking is best adapted to informal suppers, emergency luncheons, and light housekeeping.

In schools without equipment many cooking principles may be illustrated with a chafing dish, or the alcohol stove.

ELECTRICITY

Electricity is the ideal way of using heat for cooking purposes, as only a small amount of the heat is wasted, it being conducted directly to the utensil to be used.

The manipulation of the apparatus is easy, there is no time lost in lighting matches, and no unpleasant odor from smoke or other products of imperfect combustion.

The expense, both of the outfit and the electricity at present prices, prohibits its general use, but every opportunity to learn of its methods should be improved.

CHAPTER XV

LAYING THE TABLE

These directions are not intended merely for occasional dinners. They are for every-day home life; and though every detail may not be adapted to all families, yet any housekeeper, no matter how limited her means, who has a table, a cloth to cover it, and dishes for food, may follow the principal suggestions. Habits of order and neatness may be cultivated at a pine table, with twenty-five cent table-linen, and the cheapest crockery. Meals may be served in a proper way, even if one cannot follow every change which fashion may suggest.

First, air the room; wipe the table and cover with a silence cloth. Place the center of the cloth in the center of the table, and have the middle fold uppermost, and straight with the edge of the table.

The space at the table occupied by the furnishings for one person is called a "cover" and the furnishings are called the "service." In common parlance it is called a place. Allow about twenty inches for each cover, more for a meal of several courses. Arrange the service about one inch from the edge of the table. Leave a clearly defined space between each cover that there may be no question as to which cover the service belongs.

In the center of each cover lay a plate inside up; one plate at each end of the table and those at the sides opposite each other; or if the table be round arrange the covers at equal distances apart.

When bare tables are used place a doily under each plate.

At breakfast or dinner where hot plates are needed, place them all in a pile in front of the one who sits at the head of the

table and serves the main dishes. This person is usually called the host, and the person at the opposite end who serves the coffee, cereal, or soup, salad, and dessert, is called the hostess.

At the right of the plate lay first the knife with the sharp edge toward the plate, then the spoon with the inside of bowl up, the spoon needed first at the outside, the ends of handles even with edge of the plate; a tumbler with top up just above the tip of the knife.

At the left lay the fork next the plate, the tines up and handle in line with those on the right; beyond the fork lay the napkin folded in a square with initial on top and right side up. Small fringed napkin may be folded diagonally. At upper left corner, opposite the tumbler, place the bread and butter plate with butter spreader laid across one side, handle toward the right.

At a meal of several courses, lay each cover with the service needed according to the menu; the forks and spoons in the order in which they are to be used, those needed first on the outer edge. When there are many covers, lay the forks and spoons as needed with each course.

Fruit spoons and knives, or oyster forks, may be laid across the others at the right. For courses needing only a fork, place the fork at right.

The dessert service may be brought in with the plates for that course.

At breakfast or supper arrange the coffee, or tea, and hot water at the right of the hostess, the tray bowl, sugar bowl and cream pitcher in front and the cups and saucers at the left, with sugar tongs and cream ladle at hand.

At luncheon or dinner, lay a soup ladle and other large spoons as needed in front of the hostess.

Put the carving knife and fork on the carving rests at the right and left of the host, a little in front of his cover. Lay the butter knife beside the butter plate, and such other spoons, knives, or forks where they may be needed for serving the various dishes.

Fruit or flowers if used should occupy the center of the table and a low arrangement is preferable.

The salt and pepper may be between each two covers; and the vinegar and oil, pickles or jelly at convenient distances, near the corners or between the larger disks.

Arrange the various dishes on the table in regular order, straight with the table edge and exactly in front of those who are to serve them; or, if at an angle let there be some uniformity.

The cups, plates, and dishes for hot food should be heated as needed. Glasses should be filled and bread and butter put on the table just before the meal is served.

Finger bowls are considered by some people a luxury and are not usually placed on the table until the dessert; but there are other times when they are equally necessary, and there is no reason why they should not be used. When fruit is used as a first course at breakfast, they may be put on about one fourth full of warm water, at the beginning of the meal. When sweet corn is served on the cob finger bowls are almost indispensable. They are more easily washed than napkins.

Arrange the chairs so that the front edge of the seat is just even with the edge of the table.

In announcing the meal do not ring the bell when there are invited guests, but tell the hostess or the family that dinner is served.

In simple family life a bell, or a Japanese gong is allowable, but it would be better to have a regular hour for each meal and then for all to come promptly at that hour.

In gathering about the daily family table observe the same rules of courtesy as on formal occasions. The father or son should wait upon mother, or any guest, or elderly person, and see that they are comfortably seated. Children should follow in an orderly manner and all be seated at the same time.

No one, especially school children, and those who have been at hard labor, should come to the table without first washing face and hands and tidying the hair.

Girls should don a clean apron if the dress be soiled and must be worn for the after meal work, and in hot weather boys should cover soiled shirt sleeves with a thin, clean house jacket.

CHAPTER XVI

WAITING ON THE TABLE

There is no excuse for the sort of every-one-for-himself style of serving at table which is too often seen. Children, boys as well as girls, should be taught and allowed to help in the serving, even if one have a waitress. If they can have a daily share in the duties, filling the glasses, passing butter or sauce, removing the dishes between the courses, etc., nothing will give them more ease and self-possession when unexpectedly called to fill the place of mother or father at the table, or better help to counteract the evil habits of hurried eating and indifference to the wants of others, or better enable them to direct if they should ever have homes and maids of their own. The following general directions may be adapted to any style of living.

If the serving be done wholly by the family, special pains should be taken, in laying the table, to provide everything necessary, that there may be no occasion to leave the table. Spoons for tea or sauce may be laid at the plates, butter-plates and glasses filled, and other things made ready before the family are seated.

At breakfast, nearly every one wants coffee or other drink first, and there should be no undue haste in passing the substantial until this has been served. Ascertain the preference of each one as to sugar and cream, and put them in the cups, instead of passing them separately.

Do not fill the plates indiscriminately, and send them to go the round of the table, but consult individual tastes or needs, and give each one the opportunity of choice as to the various dishes. Serve first those whom you wish most to honor, and name the one for whom the plate is prepared.

It makes less confusion for some one to sit near the one who carves, and to help to the vegetables and various dishes that are to be served on the same plate with the meat, instead of passing them back and forth. Be careful to pass all the accompaniments with the principal dishes, — the butter and syrup with hot cakes, the cream and sugar with mush and fruit, the condiments and relishes where they are needed, and avoid having many things passing around at the same time.

There are many families where the lady of the house is the only person who can leave the table to arrange for the change of courses, but if there be other and younger members of the family capable of such service, it should be performed by them. No girl, old enough to carry a dish without breaking it, should ever permit her mother to leave the table for any such purpose. A side table on casters may be placed within easy reach, and have on it extra dishes and part or the whole of the last course. It will save much confusion in the serving.

Whether the waitress be one trained to the work, or one of the children, the same rules will apply. The waitress should remove the cover from the tureen or any other dish, turning it over deftly so that it will not drip on the cloth, and lay it on the side table. Stand at the right of the one who is serving, and take on the tray each plate in turn to the one for whom it is intended.

In passing a plate of soup or meat go to the right of the person served and set it on the table directly in front of him. The cup of coffee or any other drink place at the right hand, and thus avoid reaching across the plate, and also relieve the one at the table from the awkwardness of taking the dish from the tray as would be the case if you were at the left.

But in passing vegetables or any dishes from which a person is to take a portion, pass them at the left, that the portion may be taken with the right hand. The dish should be held firmly, and low and near enough that it may be within easy reach. Put the tablespoon into the dish with the handle toward the right and loosen a portion that there may be no trouble in taking it.

Provide a serving fork also for spaghetti, macaroni, and such foods as are not mashed or finely divided.

In passing a plate hold it so the thumb will not rest on the upper surface. In filling glasses, take the glass near the bottom, never with the hand over the top, draw it to the edge of the table, but do not remove it, and fill only three-quarters full. When a change of plates is required, remove the plate on the table with the left hand, before attempting to put the other plate in its place.

Briefly the points to be remembered are these.

Serve or place the filled cup or plate at the right.

Offer for choice at the left.

After all are served put the food dishes back on the table in their places, or on the serving table, and keep everything on the table in order.

At a dinner of many courses, as soon as a guest has finished the course remove his plate with the knife and fork and place it on the side table, then return and remove anything not needed for the next course.

At the family dinner do not remove any plates until all are through. When one course is finished, take the tray in one hand, and with the other remove from the left all the spoons, or knives and forks; this will prevent the danger of dropping them if taken away on the plates, and make less confusion in washing. Take away the plates, never more than one in each hand; and also everything not needed for the next course. Before the dessert, remove the crumbs with a folded napkin into a plate.

After a meal, first set the chairs in their places, and always brush up the crumbs that may have fallen, lest they be trodden into the carpet. In clearing a breakfast or tea table, where there has been no change of courses, remove the food first that it may not deteriorate by standing. Put butter and milk away at once, and any food that may be used again on small dishes and in suitable places.

Then remove glasses, silver, and plates.

Scrape the dishes, empty and rinse the cups, and pack neatly together those of a kind, near where they are to be washed. Brush the crumbs from the cloth, fold it in the creases, and put it away carefully. Put the dining room in order, and remove any odor of the meal by ventilation.

CHAPTER XVII

TABLE MANNERS

There is no place where it is more essential, or where there is a better opportunity to observe the golden rule, than at the daily home table.

"If you please," and "No, I thank you," are in far better taste than "Yes, thanks," and "No, thanks." Accept what is offered or placed before you; but should your preference be asked, and you have any, it is allowable to name it at once. When a plate has been filled for you, keep it, and do not from mistaken courtesy pass it to the next person. Make some sign of acknowledgment for what is served you, either by an inclination of the head or a quiet "thank you," whether it be offered by those presiding at the table or by the waitress. Courtesy to all, and especially to a child or a servant, should be the daily habit.

In family serving, wait until all are helped before you begin to eat, and be on the alert to assist in the serving as much as possible. But where there are trained waiters and several courses, begin as soon as you are helped that there may be no delay.

Keep the spoon in the saucer, because if left in the cup, both may be overturned.

Do not talk or drink while food is in the mouth.

Take your soup quietly, from the side of the spoon, lest in bending your arm to put the end of the spoon in your mouth you interfere with your next neighbor. Dip it into the plate *from* instead of toward you, and thus avoid dripping the soup.

Break the bread or roll, and eat it separately, not in the soup, because it is awkward to take the bread from the side

of the spoon. Never lay the bread on the table while spreading it with butter, nor bite from a large piece. Break off a small portion, and spread with butter as needed.

Use the knife only as a divider ; use the fork to convey the food to the mouth. Do not pile food on the back of the fork, but pick it up with the fork, or when necessary hold the fork inside up and use it as you would a spoon.

When not using the knife for cutting lay it across the further side of your plate. Do not rest the handle on the cloth.

In passing your plate for a second portion, leave the knife and fork side by side at the right edge of the plate. It is allowable to lay them across the bread and butter plate, but not to hold them in the hand or lay them on the cloth.

Portions of food that cannot be swallowed, like grape skins, seeds, cherry stones, or bits of bone, should not be dropped from the mouth on to the plate ; but by covering the lips with the hand it may be dropped into the thumb and forefinger without betraying to others the nature of the act.

During the meal keep everything about your plate as neat as possible, and after passing anything put it back in its place.

When your meal or one course is finished, place the knife and fork in the center of the plate, the tines up that they may not slip, and handles directly in front, that they may not be in the way in removing the plate. This signifies to a trained waitress that you are ready to have your plate removed.

At the close of the meal fold your napkin, that the table may be left in an orderly condition.

Whether serving, waiting, or eating, do everything quietly, easily, and neatly. Never be so absorbed in your own enjoyment of a meal as to be unmindful of the needs of others.

If you are in doubt as to what to do, imitate as far as possible those whose habits show that their opportunities for cultivating good manners have been superior to yours ; but on the other hand, when with those whose privileges are less than yours, make no pretentious or unnecessary display, and never cause any one discomfort by noticing any habit that may not be in accordance with your notions. Should you be at a table where butter-knives are not provided, it

would be more courteous quietly to use your own knife than to call attention to the omission. Should a friend prefer sugar and vinegar, rather than French dressing on lettuce, or prefer to eat celery with the other dishes instead of by itself, do not call attention to these or other personal preferences.

It is not a breach of good manners if you happen to eat your oysters with the common fork because you are unfamiliar with the one provided for that purpose, or choose a small spoon instead of a large one for your soup; but it is unpardonable to annoy others by eating or drinking noisily, or smacking the lips, or by picking the teeth at the table or doing anything that would interfere with another person's liberty or enjoyment. And it is equally unpardonable and even more impolite to be annoyed by anything in others whom you are not at liberty to correct and whose intentions are kind though some of their habits may be awkward. No matter how you may feel or what the blunder or accident may be, never show any displeasure to either servant or guest.

Many more hints might be given but the following general suggestion will apply to every occasion.

In table etiquette any custom is commendable that is based on the golden rule, or is sanctioned by those whose general behavior — not table manners, merely — shows that good-breeding with them means, *not selfishness*, but thoughtfulness for others. But all notions whose root is in a desire to imitate persons whose style of living is pretentious, and whose tastes and habits are capricious are worse than useless. They destroy alike our happiness and our self-respect.

CHAPTER XVIII

THE CARE OF FOOD

Your instruction would not be complete if we omitted to tell you how to take care of food, both before and after cooking, and how to prevent the waste that is so often occasioned by lack of such knowledge.

All albuminous substances when exposed to the air soon pass into a state of decomposition or putrefaction. Milk sours; eggs, fish, and meat putrefy; fruits and vegetables decay; butter, fat, and oils become rancid; preserves ferment; meal and flour become musty, and bread and cake mouldy. It is therefore important to know how to care for our food, so that it may be kept in good condition as long as possible.

As it is air, moisture, and warmth that occasion the change in food, these must be excluded. So it is well to have store-rooms in a cool and dry part of the house, and to keep many of our materials in air-tight cans or jars. But even with all these precautions much food will be lost unless it is examined daily.

Rice, tapioca, raisins, meal, and grains of all kinds, are best kept in large, wide-mouthed bottles or jars. These may be cleansed easily, the contents are seen plainly, and may be kept air-tight. Small jars or bottles are suitable for soda, cream of tartar, spices, and other articles usually purchased in small quantities. Air-tight tin cans are suitable for tea, coffee, crackers, etc. Covered buckets are convenient for flour and sugar, but enamelled pails or cans are better.

Keep the jars and boxes clean on the outside, and when they are empty, or at regular intervals, cleanse the inside. Never handle them with sticky or floured fingers.

Do not use tins for moist articles. Do not keep anything in paper bags; they break easily and give an untidy appearance to a pantry. Empty the bags as soon as the stores are sent in from the market. Fold the bags and put them away neatly to use for other purposes.

Do not keep milk in a tin can. Pour it into a large-mouthed pitcher or jar, or into a shallow pan. If milk is delivered in jars, wash off the top with hot water, and when ready to open the jar wipe around the inside before pouring out the milk. Do not have your hand over the top when handling the jar.

All dishes in which milk is kept must be washed thoroughly first in cold water, then in hot suds and scalded with clear boiling water and dried perfectly, or the milk will sour quickly. Keep anything that has a strong odor away from milk, cream, or butter, as these articles absorb odors readily.

Fruit should be kept uncovered in a cool, dark place. Examine it often and remove all decaying portions.

Salt fish has a disagreeable odor, and it should be cut into small portions and packed in glass jars. Onions and other strong vegetables should be kept covered in a dark, cool place, and where there are no other foods.

Lemons should be put into a jar and covered with cold water, with a saucer over them to keep them under the water. They will keep fresh and juicy for a long time. The water must be changed twice a week. Lemon and orange peel may be dried and grated, or put into alcohol, and used for flavoring. Cranberries may also be kept for some time, if covered with cold water. Extracts, spices, etc., should be kept air-tight that their strength be not wasted.

Meat and fish should be examined as soon as they come from the market and be wiped all over with a damp cloth. Then put them on a plate, never in paper, in a cool dark place, not on the ice, but near it. In warm weather examine the meat carefully, particularly in the folds and crevices, as sometimes clusters of tiny insect's eggs are hidden there. The marrow, or soft, fatty substance, should be removed from the backbone in mutton and lamb; also the pink skin over the fat, and the thin shiny membranes under the chops

and steaks, as these spoil quickly and then taint the whole meat.

Fresh vegetables should also be examined daily.

Dripping and other fats should be re-melted often, as they keep better in a solid than in a broken form.

Eggs should be wiped as soon as brought in, and the shells may then be used for clearing coffee.

Cooked food should not be shut up tightly when hot.

Clean and scald the bread and cake jars every other day, and never let the crumbs and broken pieces accumulate in the jars.

Remnants of food should never be put away on the large table dishes, but on small ones kept for that purpose. They should be utilized in some way as soon as possible. In preparing a breakfast or lunch see what use you can make of the "left-overs" before you decide on using new material.

Cooked vegetables will sour quickly in hot weather, especially if seasoned with butter or milk. It is better to cook in small quantities and have just enough, than to have large portions left over.

Keep everything in a pantry absolutely clean; the shelves washed and wiped dry, the crumbs removed; the molasses jug outside, free from stickiness; the lard and dripping pail free from grease. And be sure that no rancid fat, or wormy meal, or mould, or anything objectionable be allowed to remain there. Do not cover the shelves with paper or any other movable materials. A bare shelf is easier to keep clean.

Inspect the refrigerator daily, and clean the spout and pan as well as the inside.

THE WASTE OF FOOD

The most obvious way in which food is wasted is in throwing away "left-overs" but there are other ways seldom thought of, but which are equally important and which deserve consideration.

Food is Wasted in Selection. We should select foods from the standpoint of their purity, and nutritive value. Avoid novel and costly foods with little nutritive value in propor-

tion to their cost. Do not buy foods out of season or which are so indigestible that they are not assimilated in the process of digestion. Consider carefully the amount of food which is necessary and do not have large amounts which cannot be kept from deteriorating.

Food is Wasted in its Preparation. This is done by discarding much material which is nutritive if prepared rightly; by thick paring of fruits and vegetables; by discarding bones and fat of meat and skin and feet of poultry and the water in which certain foods have been boiled; by baking and broiling foods which should be stewed; by poor combinations which check instead of inciting the appetite; by inaccurate measurements that produce uncertain results or failure; and by careless serving which makes the food unattractive and unpalatable.

Food is wasted by experiments with novel recipes, incorrect in their proportions and methods; by serving too many courses, and by lack of variation in our daily menus.

Food is wasted by indulgence beyond our immediate requirements; or by eating at times when fatigue or anxiety retard digestion; or by eating food unsuited to the powers of assimilation.

CHAPTER XIX

KITCHEN EQUIPMENT

The following list of equipment for school kitchens is only a general suggestion, for each school has its own special requirements, but it will serve as a guide for both the school and the home. It is unwise to have the equipment on a scale far beyond the means of the majority of the homes in the school neighborhood.

GENERAL EQUIPMENT

Sink, with hot water if possible, and furnishings. The furnishings should include an enamelled dish-pan and draining pan; wire soap shaker and soap dish; a dipper; brass sink scraper; white soap; mineral soap; washing soap; dish towels; pan towels; oven towels; dish cloth; scrubbing cloth; floor cloth.

Stoves and Furnishings. Stove furnishings include a brush, wiping cloth and oven towels and holders. Where coal is used, hods for coal and ashes are needed.

Teacher's desk with furnishings.

A refrigerator, when classes are large and lessons are given daily.

Dining table and chairs.

Station or table for each pupil with gas burner and standard equipment and attached seats or stools.

Cabinets for :

No. 1
Dishes.
Glassware.
Linen and silver.

No. 2
Food supplies.
Glass jars.
Cans for large amounts
of supplies.

No. 3
Cooking tools.
Cooking utensils
too large for
pupil's table.



Modern Kitchen Utensils

Closets for: Broom, brushes, paint brush, pail, ice-pick, scrubbing brush and cloths, dust cloths, wiping cloths and other cleaning utensils; soap; sal-soda; ammonia, and other cleaning materials.

Garbage can and soap grease pail.

Waste paper pail and soiled towel hamper.

Utensils convenient for general use, or special occasions, but not absolutely essential for each table.

Scissors.	Hammer.
Can opener.	Scales.
Corkscrew.	2 qt. ice cream freezer.
Knife sharpener.	Iron bowl for deep frying.
Funnels, large and small.	Basket for frying.
Glass lemon grater.	Tea pot.
Tin cheese grater.	Coffee pot.
Chopping knife and tray, or	Melon mould.
Food chopper.	Tea kettle.
Bread knife.	Wire broiler.
Carving knife.	Coarse thread.
Agate gem pan.	Ball of soft, string twine.
Large needles.	Heavy white paper.
Tissue paper.	Brown wrapping paper.
Meat cleaver.	

GENERAL SUPPLIES

Soap; mineral soap; sal-soda; ammonia; kerosene; matches; gummed labels; jars and glasses for fruit canning and jellies. Fine crash for glass towels; heavy crash for cooking utensils; loose woven crash for dish cloths; cheese cloth for strainers. Flour, sugar, salt, pepper, spices, baking powder, cream of tartar, bicarbonate of soda, two kinds of cereals, rice, dried peas, tapioca, gelatine, salad oil, vinegar, molasses, tea, coffee, chocolate, shells, and cocoa.

Equipment for One Pupil

Small cutting board.	Steel fork, — two or three prongs.
Moulding board.	Plated fork, — four prongs.
Table knife, round end.	Two tea spoons.
Paring knife, pointed.	

Table spoon.	Two pt. mixing bowls.
Wooden spoon.	Salt box.
Wire spoon or egg beater.	Pepper shaker.
Tray.	Flour dredger.
Biscuit cutter, $2\frac{1}{2}$ in.	Tin plate.
Biscuit cutter, $1\frac{1}{2}$ in.	Crockery plate.
Wire strainer, cup size.	Cup and saucer.
Two pint agate sauce pans.	Sauce dish.
Two pint covered agate stew-pans.	Tumbler.
Quart covered agate stewpan.	Flour sieve or wire strainer to fit over mixing bowl.
Round, deep, enamelled or agate baking pan, for puddings, scalloped dishes and braised meat.	Tin strainer, fine mesh, to fit over stewpan for steaming; also for mashing vegetable pulp into soup.
Quart agate double boiler with agate cover.	Round, small agate baking pan.
Oblong agate baking pan with wire rack for cooking chickens, small cuts of meat, bacon and the like.	Agate pie-plates, large and small, to cover baking pans.
Bread pan, brick shaped.	Agate colander with handle to fit into double boiler, for steaming, washing berries, and draining vegetables.
Two round cake pans for jelly-cake and shortcake.	Long shallow cake pan.
Matches and match box.	Small enamelled baking cups for custards, gems, and small puddings.
Cleaning pan.	Small covered pails for scraps, one for two desks.
Soap dish.	Brush.
Dish towel.	Dishcloth.
Nutmeg grater.	Cleaning cloth.
Potato masher.	Drying cloth.
Two measuring cups.	
1 qt. crockery mixing bowl.	

One dish will commonly answer for two pupils in many cases.

The material for the utensils is indicated in the list, and labor-saving utensils under the recipes where they are used. The shape and size are important factors. In school kitchens large, heavy utensils are not needed. Mixing bowls of white crockeryware, striped with blue, are made in good shapes, with rounded bottom and flaring sides; those of medium depth may be taken up easily between the thumb and little finger and are large enough for pupils to use and for most home purposes. These bowls are stronger, yet of lighter weight than those of the yellow ware. A lip on one side of the bowl is

convenient at times but is not necessary, and is often the first part to be broken.

All bowls for cooking purposes, and stewpans and cups as well, should have no groove or dividing line between the side and bottom; and the latter should be broad, otherwise the dishes will tip over easily.

Double boilers, baking pans, covers, and any utensils that have grooves and seams are difficult to clean.

Learn to call utensils by their correct names.

A sauce pan has a lip and a handle but no cover. It is used for sauces and mixtures that do not need covering and are stirred more or less.

A stewpan has a handle and a tightly fitting cover, but no lip, for steam must be kept inside.

A kettle has a bail and tight cover, but it is not so easy to hold in pouring as the stewpan for the bail is flexible and the steam envelops the hands. With a stewpan one may hold the firm handle in one hand and pour easily from the side. In draining off water from potatoes and the like hold the handle in one hand, lift the cover by the knob, draw it back slightly, then holding it down tightly, turn the pan completely upside down, and drain off every drop of the water without spilling the contents or scalding the hands.

A preserving kettle has a bail and a lip for convenience in pouring; but the cover seldom fits closely and it is a waste of heat to use the kettle for stewing. For large pieces of meat and any food of great weight, a kettle is suitable, for both hands will be needed in lifting it.

THE SCHOOL KITCHEN

The housekeeping duties in the school should be divided among the pupils in groups of four. One should have charge of the supplies; another of the fire and stoves; a third of the sink and general dishes, and the fourth of the sweeping and dusting. These assignments should be changed from time to time so that every pupil may become proficient in all parts of the work. Each pupil should take care of her own table and utensils.

Many of the latest school kitchens are marvels of convenience, having enamelled sinks with hot and cold water, portable ovens and ample storage room at every group of two tables. But equally good work can be done with less elaborate equipment, and principles can be learned without any, if the practice work be done at home.

CHAPTER XX

PREPARATORY WORK

The first step in cooking is important, for success or failure depends largely upon how we begin. Getting ready often takes more thought and time, than the actual process of cooking.

The first preparatory step is **Selection**. Choice depends upon cost, quality, and food value; also upon the season, occupation, age, and physical condition. Questions of cost would lead us to buy round or rump steak of good quality, which has no waste, and may be bought in small portions, rather than sirloin which has inedible bone, a surplus of fat, lean meat of two extremes in quality, and which is sold only by the slice, compelling one to have the steak cut very thin, if limited as to its weight.

Questions of quality would influence us to pay the staple price for fresh, sound fruits and vegetables instead of buying on bargain days those which are under or over ripe or of slack weight. But by learning how to judge of quality, and watching the market, real bargains may sometimes be found.

When we have learned about food values we shall turn away from the tempting steaks and roasts and choose less expensive, but equally nutritious cuts, and utilize every part of them, by stewing or braizing; or buy oatmeal and wheat cereals instead of rice, or use rice when potatoes are high or of poor quality; use suet or dripping in place of butter for shortening and sautéing; or fresh and dried fruits, instead of buying high-priced inferior fruit and spending time, fuel, and labor in canning it.

Hand Work. Much of the success in the preparatory work of cooking depends upon the hands; the ability to use

them easily, to handle culinary tools skillfully, to make every motion effective, and to keep the sense of touch keen, for the last is a sure guide in many processes.

After selecting the food and planning the meal the next step is **Separation**. This is the beginning of hand work. Hand-made is a term signifying of fine quality; work that has been done with more skill and painstaking than that done with machinery. Handsewed shoes, hand embroidery, hand carved furniture, are valued highly. Hands must be clean; utensils must be clean, and food must be clean. The first hand work with many food materials is to make them clean, and to separate the edible part from that which is inedible. We remove earthy matter from vegetables grown under ground, by washing, scrubbing, or by picking leaves apart and rubbing and rinsing in several waters, or by removing the skin or outer covering, of the edible portion.

All these preparatory processes have certain names, indicating the special method of each; and as they occur in all recipes and cook-books, beginners in cooking should learn the meaning of each term and just how to do each kind of hand work. Frequently the pupils will need to be shown how to hold their tools, for mechanical skill is not always intuitive.

Pare potatoes, apples, pears by cutting just below the skin and down between the skin and substance in half-inch strips. Turnips and squash, cut across with a broad knife in half-inch slices and then pare.

Scrape parsnips, carrots, and new potatoes by drawing the edge of the blade over the surface taking off a mere shaving.

Peel boiled potatoes, scalded peaches and tomatoes, oranges, and bananas by taking an end of the loosely adhering skin between the knife and thumb and pulling or stripping it off.

Shell beans and peas by slight pressure of thumb and finger until the pod opens.

String: break off the end of the bean pod and pull off the stringy fibre which unites the pod.

Husk corn by pulling off the green leaves and silky thread.

The next step in preparatory work is **Division**. Slice vegetables, fruit, bread, pineapples, and meat by cutting across the material into slices of uniform thickness.

Dice by cutting slices into strips and strips into cubes.

Chop tender meat, fruits, and vegetables by an up and down motion of a broad knife in a tray or on a board.

Combination is the next step.

Mix flour with sugar by stirring round and round; flour and butter by chopping or rubbing, flour with water by stirring water in slowly but smoothly.

Cream butter and sugar by rubbing until soft.

Beat by over and over motion with a spoon until the mixture is light.

Combine by putting two mixtures together.

Blend by stirring or beating thoroughly until all the materials are as one.

Work with your head as well as your hands. Keep your mind on the work; every sense on the alert, for the senses of sound and smell will tell when water has boiled out, fat is hissing, and food is burning.

MEASURING

Accurate measurement is necessary to insure success in cooking. It is best secured by using gallon, quart, and pint measures, the half-pint cup and tablespoons and teaspoons of standard size.

Measuring cups hold one half pint (milk measure) and may be bought in tin, enamelled, and glass ware, with handle. Some are divided on one side into quarters and on the other into thirds; or you may find one cup in quarters and another in thirds. They should supersede entirely the use of tea cups, blue cups, and tumblers, which were called for in nearly all old time recipes.

Tablespoons of the usual size are three inches long and one and three fourths inches wide.

Teaspoons should measure two inches long and one and one fourth inches wide.

Half-teaspoons should be in every kitchen; they are like

a teaspoon with the bowl cut through the middle from tip to handle, with an upright edge forming a back on the line of division. They are convenient, especially in measuring a half teaspoon of liquid.

How to Measure. All measurements now taught in schools are level.

Before measuring, sift dry materials like flour, meal, and powdered sugar, into a pan; or, to save dishes, sift on to a piece of clean paper. Closely packed materials like mustard, soda, and baking powder, usually measured with a spoon dipped into the box—first stir them or break up lightly, then sift on to a paper and measure without pressure when filling the spoon.

The results of careless measurement are most objectionable when there is an excess of salt, soda, or pepper. These should be measured with special care.

Cup Measure. Hold the cup over the pan and fill with a spoon or scoop, even with the groove if a part of a cup is needed, and slightly more than full for a whole cup; then with the back of a table knife held perpendicularly scrape off till it is level. Do not dip the cup into the material, nor shake it when filling, nor press the material in when levelling.

A Scant Cup. Measure level, then remove two tablespoons of material.

For liquids, stand the cup in a saucer and fill by pouring in from a pitcher or something with a lip, as much as it will hold without running over.

To measure butter or lard, cut small portions and pack in closely, leaving no air spaces; other solid materials like diced vegetables, meat, fish, and bread should be filled in lightly.

Tablespoon and Teaspoon Measures. Fill by dipping the spoon with the left hand into dry material; take up, and with a table knife in the right hand, scrape off all that is above the rim of the spoon. With butter, cream, molasses or other sticky substance, do not dip in, for a portion will cling to the under side of the spoon and if removed and used, you will have more than the correct proportion. With liquids like melted butter, and molasses, fill by pouring; with soft butter and lard, fill by packing it level with a knife.

Half Teaspoon. Fill teaspoon level, divide lengthwise, scrape out one half. One fourth teaspoon, divide the half portion crosswise, for one eighth, divide the quarter diagonally.

Speck or Grains. This is the amount which may be taken up on the point of a paring knife or other quarter-inch surface ; or a slight shake from the pepper box.

Weights. Pupils should be taught the use of scales ; they are necessary for meat and large quantities of fruit and vegetables ; they are convenient and economical for butter and lard, as both time and material are wasted in packing and removing butter from a cup, and also from a tablespoon where several measurements are to be used.

By memorizing the tables of weights and measures, and frequent comparisons of the two, and frequent practice in dividing by the eye, accuracy may be secured. We are expected to learn how to divide by the eye a loaf of bread or cake into slices of given thickness, pies into sixths, and to serve many foods in equal portions. It is equally easy and equally desirable to save time and labor by cutting a pound of butter into halves, quarters, and ounces ; and by practice be able to cut off with two strokes of a knife a cube which is equivalent to two tablespoons. It should measure about one and one fourth inches each way.

This cutting by the eye is very quickly done with print butter which is partly divided into quarter-pounds, sometimes into ounces. Divide the quarter-pound in the middle each way, and you have one ounce or two tablespoons, the measure most frequently used.

With tub butter weigh out a pound, pack it into rectangular shape, then divide in halves, quarters, and again into quarters, until you have the ounce portion. Where frequent portions of measured butter are needed daily it is well to prepare a quantity at a time and keep them cool until needed.

Butter which is soft and watery from insufficient pressure in the making, has less fat than that which is close-grained and has been thoroughly worked over. Therefore, no matter how accurately you measure the level spoon, the results will be different with different butters.

ABBREVIATIONS

tbsp.	stands for	tablespoon.	pk.	stands for	peck.	
tsp.	"	"	gal.	"	"	gallon.
spk.	"	"	qt.	"	"	quart.
c.	"	"	pt.	"	"	pint.
h.	"	"	lb.	"	"	pound.
m.	"	"	oz.	"	"	ounce.

Time may be saved in writing recipes by using T for tablespoon and small t for teaspoon. It is not necessary to use the suffix *ful* in writing or in recitation. We do not say a pintful nor a quartful; why should we use it with cups or spoons? If we say "one cup" we mean that it is full. If we wish to designate less than that amount, we give the fractional part, as one half, or two thirds, which means that part of a full cup.

TABLES OF MEASURES AND WEIGHTS

3 tsp.	= 1 tbsp.	4 c. flour	= 1 lb.
4 tbsp.	= $\frac{1}{4}$ c.	2 c. solid butter	= 1 lb.
8 tbsp.	= 1 gill.	2 c. gran. sugar	= 1 lb.
2 gi.	= 1 c.	2 c. milk or water	= 1 lb.
2 c.	= 1 pt.	2 c. solid meat	= 1 lb.
2 pt.	= 1 qt.	1 tbsp. liquid	= $\frac{1}{2}$ oz.
4 qt.	= 1 gall.	4 tbsp. flour	= 1 oz.
8 qt.	= 1 pk.	2 tbsp. sugar	= 1 oz.
4 tbsp.	= 1 wineglass.	2 tbsp. butter	= 1 oz.
9 large eggs	= 1 lb.	Cube of butter $1\frac{1}{4}$ inch	= 1 oz.

PART I

LESSON I

FOOD

Importance. The subject of food, which we are to study in these lessons, is of vital importance, for life itself depends upon a regular, proper, and continuous supply of food.

Our health depends upon the purity, wise selection, and wholesome preparation of food. Our enjoyment in partaking of food depends upon its flavor and appearance.

The amount of money which we may spend for the other necessities of life depends largely upon the cost of our food; and the time and means for our mental and moral growth, our pleasures and our relaxations, depend upon the amount of time and work consumed in its preparation and conservation.

Source. Food is any substance, which, taken into the body, builds up the tissues, supplies energy in the form of heat, and power for work.

The substances commonly used as food by man are classified in several ways.

Animal foods: Milk, eggs, meat, and fish.

Vegetable foods: Potatoes, squash, spinach, apples, berries, nuts, corn, wheat, sugar, oil, etc.

Natural foods are those which may be eaten without a more extended process than the raising of animals and the cultivation of vegetables; as milk, eggs, ripe fruit, some green vegetables, and some meats and fish.

Manufactured foods are prepared by various processes and usually in large quantities. Some of these processes are the making of flour and meal from wheat and corn; butter and

cheese from milk ; lard from pork fat ; sugar from cane juice ; oil from seeds, and jellies and syrups from fruits.

These foods are securely packed in barrels, cartons, boxes, tubs, pails, cans, jars, and bottles, suitable for transportation and long-keeping, and are found in groceries, markets and provision stores, in every part of the world.

Prepared foods. Many foods which in former years were prepared in the home, are now made ready for our use in factories. They greatly reduce the work of the housekeeper, but should not be depended upon for the entire food supply.

It is now possible to buy almost anywhere condensed milk, evaporated cream, a great variety of cooked breakfast-cereals, wafers, crackers, biscuit and other cooked flour mixtures, cheese, canned meats, soups, fish, vegetables, fruits, jellies, preserves, puddings, confections, and sauces and other appetizers. Many of them need no heating ; some need only to be aerated, and others no preparation, except to be served attractively. Nearly all may be kept a long time if not opened.

Bakeries supply us with bread, pies, cake, baked beans, cooked meats, and other perishable foods. Delicatessen shops make us familiar with foreign culinary methods, and the best of home cooking may be bought at tea rooms, or directly from the maker.

Everywhere, more and more women are earning money in their homes by their skill in making jellies, cake, or other specialties.

But from considerations of economy, individual tastes, and quality, the greater part of our food must still be prepared in the home.

The school girls of to-day will be the house and home-keepers of to-morrow, and in these lessons they may learn how to select, prepare, combine and serve the daily food, in the most economical, wholesome, and attractive ways.

Fresh fruits are valuable as foods on account of their acids, mineral matter, and appetizing flavor. They may well form a part of every meal, served raw or cooked in some simple way, and take the place of pickles with meat and rich pastry and puddings for dessert.

RECIPE, No. 1. HOW TO SERVE FRESH FRUITS

Oranges, Grapefruit, and Melons. Serve very cold ; wipe ; divide halfway down from the stem end ; remove seeds, and eat from the skin with a spoon, with or without sugar.

Berries and Small Fruits. Pick over ; rinse ; hull ; drain, and serve with sugar.

Cherries and Currants may be served with their stems and *Grapes* may be served in clusters.

Plums, Pears, Apples, and Bananas. Wipe and serve whole, or if preferred, remove the skin just before serving.

Peaches. Wipe and serve whole ; or pare, slice, and sweeten if preferred.

Pineapples. Cut in half-inch slices ; pare ; pick out the eyes ; discard the hard center ; add sugar, lemon juice, and a little water, and serve very cold.

Bananas may be sliced and combined with mashed and sweetened *Currants* and *Raspberries*.

LESSON II

FOOD STUFFS

Before taking up any form of cooking, let us see what our home supplies furnish, or what we may find at the grocer's, which needs no cooking and will be suitable for a school or picnic luncheon.

First we should know what foods to choose. One girl may say, "I'll choose cake and chocolates"; and another says, "I like pickles and pie."

But our choice should not be governed entirely by our preferences. We are to learn in these lessons what and how to choose, and therefore first we should know something about the kinds of food we need and how they build up the body.

The substances which are found in the foods commonly used are called *Food Stuffs*. They are classified for the purpose of study into five groups: Water, Proteins, Fats, Carbohydrates, and Mineral Matter.

Water. You are all familiar with water and know that we drink it as a beverage and take it in many of our foods, especially in fruits and vegetables.

Fats. You know about fat in butter and cream and the fat of meat; also in the oil in nuts and in the oil which we eat on our salads.

Protein may be a new word for you, but at present think of it as a substance having many forms; like the lean of meat, the white of egg, the curd of milk which we use as cheese; and then remember that it is also found combined with other food stuffs, in bread, beans, oatmeal, and many other foods, in forms which you will learn about later.

Carbohydrates is a term which includes starch, sugar, and cellulose.

Starch is found in potatoes, rice, corn, bread, nuts, and in smaller proportions in many other foods.

Sugar is found in the juices of plants and fruits, but we know it best in its manufactured form as granulated and maple sugar.

Cellulose is the tough membrane in fruits and vegetables. You have seen it in the thread-like fibres of spinach and asparagus, and in the white covering of the divisions of an orange.

Mineral matter is found in small portions in all of our foods. Among the most important are sulphur in eggs, iron in meat, calcium in milk, phosphorus in meat, fish, and cereals, and potassium in vegetables. These are all in too small quantities for you to distinguish but you are familiar with salt which is the only mineral which we add to our food.

We need a mixture of all these food stuffs in our daily meals. Some foods which we eat contain several of these substances; some have only one; milk, cereals, and many foods have all of them, but not in the right proportion for all persons.

How to plan our meals so that one food will supply what another food lacks, and give each person the right proportion of the food stuffs, is one of the most important things to learn about in cooking.

COMBINATIONS OF PREPARED FOODS FOR SCHOOL OR PICNIC LUNCHEONS

Many persons who have but little knowledge of food values will frequently, from custom or instinct, select suitable combinations of food; for example, when away from home as meal time approaches, they will buy on the train or at some fruit vender's corner, the following foods, which we will class as

Lunch, — Combination No. 1.

Popcorn,	which contains starch, protein, fat, mineral.
Peanuts,	which contain fat, starch, protein, mineral.
Chocolate Creams,	" " sugar, fat, protein, mineral.
Apples,	" " water, sugar, acid, mineral.

The first food stuff mentioned is the principal one in that food; *i.e.*, starch is the principal part of popcorn, fat of peanuts, sugar of candy, and water of apples.

Provided these foods are well masticated, and eaten as a meal, they afford a well balanced ration for an emergency. But to munch them continuously without giving the stomach time for rest, or to eat too large quantities of any one of them alone, or after a hearty meal, as is too frequently done, is unwise.

Other combinations of prepared foods are given to illustrate the various kinds of food in common use, the grouping of seasonable and harmonious foods, and some methods of serving which will be found convenient where table appointments are lacking. A brief outline of methods and a few recipes will be sufficient; the combination most seasonable and convenient may be selected for demonstration and the pupils may prepare the others at home, bringing them for the school lunch or for credit for home work.

We must all like, or learn to like, and eat every kind of wholesome food; then we will all like to work and play, to study and think, and will be kind and pleasant.

But if we eat too much, or too little of any one kind of food stuff we will be lazy, stupid, and irritable.

Lunch, — Combination No. 2. Wafers, cheese, jelly, banana, nuts, milk.

RECIPE, No. 2. CHEESE AND JELLY SANDWICHES

Use cream cheese or any common cheese grated; spread half the wafers with cheese and half with jelly; chop the nuts fine and sprinkle them over the cheese, reserving part of them to use with the banana, if preferred; put the wafers together, some with two of jelly or two of cheese, and some with one of each. Wrap them in the waxed paper lining of the wafer box. Provide a napkin, knife, fork, teaspoon, wooden plate, and enamelled cup, and also a suitable box or basket.

Lunch, — Combination No. 3. Graham wafers, peanut butter, tomato salad, hermits, pear.

RECIPE, No. 3. PEANUT BUTTER WAFERS

Spread the wafers with a thin layer of peanut butter and put together; peel the tomatoes, cut in halves, and dress them with any preferred salad dressing, or with sugar and salt. Put them in a jar with a tight cover; or take the dressing in a bottle, and the salt and sugar in paper bags.

RECIPE, No. 4. QUICK LEMONADE

1 lemon.
 $\frac{1}{4}$ c. sugar.
1 pt. water.

Wash and scrub the lemon; parasites and particles of dust often lodge in the rough skin, and scrubbing is needed to remove them.

Shave off one fourth of the thin yellow peel; put the sugar and peel into a pitcher and press with a small wooden masher until the sugar has absorbed some of the oil from the peel, — this is to give flavor. Cut the lemon in halves; squeeze the juice out with a lemon squeezer; stir it into the sugar; add the cold water and one tablespoon of chipped ice, and serve very cold.

LESSON III

PROPORTION OF FOOD STUFFS IN DAILY MEALS

We may have some idea of this proportion from our instinct or appetite when we are in a normal condition of health. We all like a little butter on our bread, for wheat has a small amount of fat; — no one would relish a thick slab of butter. We generally eat about one fourth as much meat as of the combined amount of potatoes, vegetables, and dessert.

The proportion of these food stuffs varies with persons of different ages and occupations; but an average proportion is about four ounces of proteins, four ounces of fats, and fourteen to sixteen ounces of carbohydrates.

Perhaps you will understand it better if you think of the daily meals in a family of average health and intelligence. If we could measure the food as it is prepared in such a home and separate it into the several food stuffs, we would find that the proportion is about as follows:

One half cup of protein made up chiefly from that in the milk, cereal, and egg for breakfast, meat or fish, and beans for dinner, and smaller portions of protein in the cereal, bread, milk, cheese, and other foods. These protein foods build muscle and other tissues in our bodies and are necessary for growth.

One half cup of fats made up of the cream, butter, fat of meat, nuts, and oil. These foods keep us warm.

From four to six cups of the carbohydrates, chiefly made up from the starch and cellulose in cereals, potatoes, bread, puddings, cake and fruit, and the sugar we eat with our cereal, cocoa, fruit, and in our candy, cake, and desserts. These foods also keep us warm and make us strong and

active, ready to play hard and to work. All these carbohydrates make us fat, if we eat too large a proportion of them and do not exercise. To express it briefly, they give us energy.

The amount of *mineral matter* taken daily we cannot estimate, but generally we have all we need if we have a variety of food. Mineral salts or ash build up the bones and certain tissues like hair, teeth, and nails, and regulate the body processes by keeping the blood and digestive fluids in proper condition.

We take daily *from two to three quarts of water*; a small portion of it in all our solid food and a large amount in milk, fruit, and vegetables, and we should take at least six glasses of clear water during the day.

This water and that which we have taken in the juices of fruits and vegetables, with the mineral matter which they contain, keep the blood clean and able to carry the nourishment from the digested food to all parts of the body.

The *cellulose* which we take in fruits, vegetables, and cereals, does not build up the body nor make us strong, but it gives the bulk needed in the stomach and intestines while other foods are being digested and absorbed.

By keeping this simple proportion in mind, we can understand all that is necessary to know until we have time to make special study of this subject. From it we learn that when we eat eggs and meat at every meal we have had too much protein, and if our dinner is potatoes, rice, and bananas, or our supper mostly sugar and cream, we have eaten too much carbohydrate.

One reason for grouping food stuffs in this way is because each class of food, when eaten, has a certain effect on our bodies. Some food stuffs do several things. Proteins, fats and carbohydrates all keep us warm and help us work; but proteins alone make muscle and other tissue.

Protein therefore is the food stuff that we must have every day in some form; and fortunately we can find it in an inexpensive as well as in a costly form. Do not think of it only as meat.

These food stuffs are not found alone except in a few

cases but they are wonderfully mixed and are hard to separate. They grow together; they are eaten together, and therefore it is natural and right that we should study them together.

While a knowledge of dietetics and its terms, such as calories, is desirable in an advanced course in cooking the homemaker will find it advisable, when a special diet is needed, to consult the physician; it is only necessary to bear in mind the rough principles of a balanced diet, for the average healthy family.

It may help the younger pupils to understand and remember the distinctions and uses of food stuffs, if we think of them in this way.

In the body :

Protein makes and mends.

Fats heat and help.

Carbohydrates warm and work.

Water carries and cleans.

Minerals frame and form.

Afternoon Tea, — Combination No. 4. Wafers, sardines, olives, gingersnaps, plums or raisins, lemonade.

RECIPE, No. 5. SARDINE SANDWICHES

Remove the skin and back-bone from plain or smoked sardines; mash to a paste; add to each tablespoon of the paste one-half teaspoon of lemon juice; spread it on any thin unsweetened wafers; put two together and wrap in waxed paper.

RECIPE, No. 6. LEMONADE FOR PICNICS

X Cut lemons in halves; remove seeds; press cut-side on a glass lemon grinder, turning it round till the pulp is all out. Add to the juice twice the amount of sugar; stir until dissolved; bottle it and in serving dilute it with four parts of cold water.

Lunch,—Combination No. 5. Brown bread, canned chicken, celery, macaroons, ice cream, cantaloupe.

RECIPE, No. 7. CHICKEN SANDWICH

Cut very thin slices of brown bread; spread generously with creamed butter; chop the chicken and chop also part of the celery; mix it with the chicken; salt it well and spread it on the bread; wrap in a damp napkin. Use canned tongue in the same way if preferred.

RECIPE, No. 8. FRUIT ICE CREAM MADE IN A PAIL (INDIVIDUAL RECIPE.)

$\frac{1}{2}$ c. cream.	2 tbsp. banana or peach pulp.
2 tsp. sugar.	$\frac{1}{4}$ tsp. lemon juice.
spk. salt.	

Rock salt and crushed ice, amount depends on size of outer pail.

Stir sugar and salt into the cream; peel and mash the fruit; sift if lumpy; add lemon juice and more sugar, amount depends on the fruit. Mix well; beat till foamy; turn it into the pint can or pail, which should be water tight, with a tight cover fitting over (not into) the pail. Set this pail into a larger one:—the space between should be about two inches wide. Crush the ice in a strong burlap bag by pounding with a wooden mallet till fine. Remove small pail and cover bottom of large pail with ice. Replace the other pail.

Mix one cup of salt with three cups of ice and fill the space between the pails; pound it down with a stick, add ice to cover the inner pail. Turn the pail back and forth for five minutes; push off the ice; wipe the top; open and scrape the frozen cream from the sides to the middle. Cover and turn again; repeat this until the cream is all hard.

Follow the same method of packing if you have a patent freezer, increasing the amount of salt and ice as needed.

Afternoon Tea, — Combination No. 6. White bread, scraped raw beef, lettuce, cookies, peaches, pe-cans.

RECIPE, No. 9. SCRAPED BEEF SANDWICH

Select lean juicy beef from the top of the round near the rump end. Cut it in thin strips; scrape the pulp free from the fibre; season it highly with salt and pepper, or with salad dressing. Put it between thin slices of white bread.

Cut the bread thin, spread with salad dressing; cover half of the slices with the scraped beef and half with lettuce. Put together and wrap in a damp napkin.

RECIPE, No. 10. PREPARATION OF LETTUCE AND CELERY

Lettuce. Pick off each leaf; remove decayed portions; wash in cold water, turning each leaf inside down so grit can drop out; drain and wrap in a napkin and lay it in the refrigerator until needed; or put it into a tin pail; cover well, and keep it down cellar.

Celery. Trim off leaves and root; scrape off the browned part; wash and wrap in napkin, as for lettuce. Scrape only the portion needed for immediate use.

Questions on Lessons I, II, and III

- | | |
|---|--|
| Why should we study food? | What mineral do we add to our food? |
| What is food? | |
| Name some foods which you know and where obtain them. | Is pepper a mineral food? |
| What foods are eaten un-cooked? | Why do we need to know about these food stuffs? |
| Name some of the foods which are manufactured by the various processes. | How may we serve a picnic lunch as daintily as on the dining table? |
| What foods do we buy in barrels? tubs? bottles? | Why do we wrap wafer sandwiches in waxed paper and bread sandwiches in a damp napkin? Give an original lunch menu which will contain all the food stuffs using only foods which need no further cooking. |
| Name the five groups of food stuffs. | |
| What foods contain the most starch? protein? fat? | |
| What mineral matter do we find in eggs? vegetables? | |

LESSON IV

NATURAL FOODS

While we are studying the kitchen equipment, or some methods of cleaning, we should also learn more about the natural foods, or those which require no cooking. The following recipes show types of each of the food stuffs. We must keep in mind through all the lessons that these food stuffs are seldom found alone and that when we speak of certain foods as belonging to the proteins or the fats, — we mean that the edible part, which is all we can utilize, contains a large proportion of that particular food stuff.

RECIPE, No. 11. SLICED APPLES

Cut four large, tart apples in eighths; pare and core, and cut across sections in thin slices, less than an eighth of an inch. Let the slices fall into a shallow earthen dish, and as soon as one apple is sliced, sprinkle over it a little salt and an even coating of sugar. Mix the juice of one small lemon with half a cup of water, and put a quarter of it over the apple. Then repeat until all the apples and water are used. Cover and after five minutes drain off the syrup and toss the apples over and pour the syrup over again. Repeat this at intervals of five minutes, several times, then taste and add more sugar or lemon to the syrup as preferred.

This may be served as a sauce for dessert or be combined with bananas. Or you may use less sugar and water; add a little paprika, and serve it on a bed of shredded lettuce as a salad, and eat with scraped raw beef sandwiches. Those who cannot eat oil, and who prefer sugar and lemon on lettuce, will find the apple a pleasant addition.

RECIPE, No. 12. CREAMED WALNUTS

The white of one egg and an equal amount of cold water, flavored with one teaspoon of lemon or vanilla. Beat until mixed thoroughly, then beat in confectioner's sugar, sifted, until the dough is stiff enough to mould. Break off pieces the size of a nutmeg, roll them in the palm of the hands until smooth and round. Press the halved walnut-meats on each side, letting the cream show slightly between the meats. One egg will require about one and one-fourth pounds of sugar.

RECIPE, No. 13. CREAMED DATES, ALMONDS, ETC.

Stone the dates and shell the almonds. Make the sugar dough as directed for creamed walnuts. Put a ball of the dough into the center of the date and cover the almonds with the dough. Creamed nut-cakes may be prepared by stirring the chopped nuts into the dough. Press it out into a flat sheet three fourths of an inch thick; then cut in inch squares.

RECIPE, No. 14. EGG-NOG

Beat the yolk of one egg, add one tablespoon sugar and beat till creamy. Add one half cup of milk. Beat the white of the egg till foamy (but not stiff and dry) and stir it in lightly.

RECIPE, No. 15. FRUIT SALAD IN LEMON CUPS

Allow one half a lemon for each serving and select such as are fine and uniform in size. Use equal portions of cherries, strawberries, and bananas, if made in summer, or of peaches, plums, and grapes, if in September. Cut off a thin slice from each end of the lemon so it will stand upright, cut in halves, and scoop out the juice and pulp and all the inner membranes, and strain the juice. Stone the cherries and halve them. Hull and clean the berries, cut them in halves, and remove the surplus seeds. Cut the bananas of the same size as the others and mix all together. If late fruits are

used, peel peaches and plums and cut small ; skin and seed the grapes. Put a shake of salt and a generous sprinkling of sugar over each layer and the strained lemon juice over the whole. Let it stand in a cold place until the sugar is dissolved. Then fill the lemon cups with the mixture and put a tiny tip of fresh, crisp water-cress on the top. Cut some blocks of bread, one inch thick, two wide, and about four long ; hollow the centers enough to hold the cups, and cut the ends in thin slices nearly through, leaving just enough so they can be pulled off easily while eating the contents of the cups.

RECIPE, NO. 16. PEACH OR STRAWBERRY WHIP

Stir one cup of clear strawberry juice or of peach pulp into one pint of thick double cream ; add one cup of powdered sugar and whip till stiff ; then add beaten whites of two eggs and continue beating till very stiff. Turn into a deep glass dish and garnish with large whole berries or halved peaches.

ICE CREAM

Some cooked foods and combinations of uncooked foods are more palatable when cold, especially in hot weather. These foods may be made very cold by freezing and they are called ice creams and water ices. Ice creams are mixtures of cream, milk, eggs, sugar, and flavoring. Water-ices or sherbets are mixtures of water, fruit-juice, and sugar.

The Freezer. A patent freezer is a convenient article to have but it is not a necessity. A small quantity of cream may be frozen in a covered can or pail that is water tight by surrounding it with three parts of crushed ice and one part of coarse salt, and stirring it frequently.

Salt makes the ice melt and the melting ice dissolves the salt ; the two in changing from the solid to the liquid form, lose some of their heat, and the brine is many degrees colder than the ice. The brine absorbs heat from the can and soon the contents begin to freeze. The finer the ice is crushed the quicker it melts ; and the more the mixture is stirred the sooner all parts become chilled.

RECIPE, No. 17. FRUIT ICE CREAM

3 oranges.	$\frac{1}{2}$ can apricots.
3 lemons.	3 c. sugar.
3 bananas.	3 c. cold water.

Place a strainer over a large bowl ; squeeze into it the juice of the oranges and lemons ; then add the bananas and apricots, and rub them through the strainer. Add the cold water to help in the sifting. Add the sugar, and when it is dissolved, turn the mixture in the freezer can, and freeze as directed.

LESSON V

CANNING AND PRESERVING

As water forms so large a part of the daily diet, aside from its use as a beverage, we study this food stuff first. Fruits contain a large amount of water, and the study of their preservation should come early in the school year, while fresh fruits are obtainable.

UTENSILS FOR CANNING

Granite or porcelain-lined kettles, with bales and lips for convenience in pouring, and that are free from all blemish or break in the glazing, are almost essential for this work. They should be broad that considerable surface may be exposed to the heat, and deep enough to prevent boiling over. Can but a little at a time, not more than two quarts. If you have a large amount to cook, have a kettle holding six or eight quarts, one holding three, and two holding two quarts.

A small, sharp-pointed knife for paring, also an old, silver-plated knife ground to a fine edge, will be found convenient for articles which a steel knife might discolor.

For convenience you should have wooden spoons, small and large, with perforations, a wire spoon, large and small silver spoons, scales, a hair-sieve, a silver nutpick or skewer, a granite colander, a wooden masher, and several yards of coarse and fine cheese cloth, and fine cotton and woolen flannel.

Quart and pint glass jars, with large tops, are the best for general use. See that the glass covers are free from nicks, the spring or clamp in perfect order, and that the rubbers are new and free from cracks. A few jars of the two-quart size will not be amiss if you plan to can large fruit whole. Two

sizes of jelly tumblers are desirable, with good paper, and suitable labels and paraffin for covering.

Use pure granulated sugar and avoid that with a blue tinge.

Do not use tin, iron, or brass utensils, and avoid anything that will savor of uncleanness.

It is mistaken economy to put in even one speckled or partly decayed berry or bit of fruit, for the germs of decay may extend further than your cutting and spoil the whole.

Use the fruit as soon as possible after gathering. Fruit is better a little under ripe than over ripe, and should be gathered in fair weather, and be washed carefully and thoroughly.

In canning all fruits care should be taken to boil the material slowly.

PREPARATORY WORK

Wash and scald all utensils, for thorough sterilization is needed, especially in the canning of vegetables. Put the jars and glasses on a rack in a large boiler on the stove and cover them with cold water. Let them remain at least half an hour after boiling begins. Treat the covers and rubber rings in the same way, and put all together in a pan for convenience in removing. Jars may remain submerged in the boiling water until ready to be filled. Lift out the number needed for the first amount of fruit and stand them on a towel in a pan holding an inch of hot water, with covers near.

COOKED FRUIT

Turn out the water from the jar; adjust the rubber, and fill nearly to the top with cooked fruit. Pour small fruits in with a cup and through a wide-mouthed funnel. Pack in halved or whole fruits carefully, best side up, by using two tablespoons. Fill to overflowing with the syrup, but if there is not enough add a little boiling water, which should be at hand ready for the purpose. Put on the cover; adjust the spring on the can; wipe clean and stand them on their tops. When cool tighten the cover, and if a screw cover is

used, give it an extra twist occasionally. If after two days no juice has leaked out, the jars may be considered tight.

FOOD COOKED IN THE JAR

Sterilize the jars, which should be wide and fitted with glass rather than metal covers, and fastened with springs. Select sound, firm, well-shaped fruit and use it whole or in halves. Pack it tightly in the jars. For quart jars, dissolve one half cup of sugar in one cup of hot water for closely packed fruit; one pint of water for whole fruit. Use more sugar for very acid fruits. Fill the jars; put on the covers lightly; stand the jars on a rack in a boiler. Turn in water to come half way up, — it must not boil into the jars. Cover the boiler and after boiling begins, cook the fruit one hour, or longer if not tender. Remove the jars when cool; add syrup or boiling water until overflowing and adjust the covers and springs.

CANNED VEGETABLES

Follow the same methods for canning peas, string beans, and sweet corn, using salt in the water in place of sugar and continue the boiling for three hours.

Reheat as directed in following paragraph.

The former failures in canning vegetables and fruits were due to a lack of knowledge concerning bacteria and the necessity of destroying all micro-organic life in the product to be canned by sterilization. Sterilization means the destruction of all germ life and in canning all must be destroyed on the cans and utensils as well as upon the article to be preserved. It has been learned that while many germs may be killed by boiling once, some of their spores, or offshoots find this temperature best suited for their growth and germinate rapidly. For this reason it is now the practice to re-heat the food in the cans at intervals of twenty-four hours. Put the jars into warm, not hot, water as on the first heating and the temperature should be kept at 165° Fah. for fifteen minutes each time. This process is called "Intermittent Sterilization."

RECIPE, No. 18. CANNED TOMATOES (1)

Tomatoes should be canned when the fruit is in the best condition and the first fruit ripened is better than the late growth.

Have a large kettle of rapidly-boiling water on the stove. Wipe the tomatoes, fill a wire basket with them, and plunge it into the boiling water until the skins begin to crack. Then plunge into cold water, and remove the skins and the hard part under the stem.

Mash thoroughly, and let them boil quickly until perfectly soft, but not enough to evaporate all the liquid. Then season as for the table. To every quart, allow one teaspoon of salt, one quarter teaspoon of pepper, and half a cup of sugar. Cook five minutes longer, then fill the jars nearly to the top. Run a spoon handle or table knife around the inside of the jar to remove the air bubbles. Fill with fruit until it flows over. Seal, wipe and turn over until cold. Wrap the jars in paper and keep in a dark place.

RECIPE, No. 19. CANNED TOMATOES (2)

Prepare as in the first recipe, but season only with salt. Let them boil down until quite thick, then fill the jars nearly to the top, add boiling water to the brim, and seal at once. Be careful that no seeds or pulp run over the edge between the glass and the rubber. Keep the jars wrapped in paper in a cool place. Use these only for soups and sauces.

RECIPE, No. 20. CANNED WHOLE TOMATOES (3)

Scald and peel; put them into large jars; fill with hot water; set them in a large boiler with something beneath to keep them from the bottom, — a folded towel or a meat rack. Surround with water and boil two hours. Fill to overflowing with boiling water and seal.

RECIPE, No. 21. CANNED PEACHES

Select large yellow peaches, deep red on one side and around the stones. Pare, put into cold water until you have enough

to fill a jar. Allow one cup sugar and two cups water to each jar of whole fruit. Boil the water and sugar, skim, cook the peaches until well scalded. Empty the jars and fill with cooked fruit; put on the rubber, and cover while you boil down the syrup until red, strain it, and fill jars to overflowing and seal.

RECIPE, No. 22. CANNED BLACKBERRIES

Allow one cup of sugar and one half cup of water to each quart of blackberries. Boil and skim the syrup, then add the berries, as many as will cover the surface, cook slowly ten minutes; then skim them out, and add others until all are cooked. Put all back into the kettle, let them boil up once, then pour quickly into the jars, and seal immediately.

Follow the same method for strawberries.

CANNED FRUIT

Canned fruit should be opened some time before using, that it may be aerated and the flavor improved. There has been a strong feeling against the use of fruit prepared in tin cans. Chemists have examined canned fruit as soon as opened, and found it harmless; but if the fruit be left in the tin can, the action of the air causes the acid in the fruit to act upon the metal and form a poisonous compound. Care should be taken to remove the fruit from the can as soon as opened.

Cans should be slightly concave on the ends. If the ends bulge the contents are not in good condition.

RECIPE, No. 23. PRESERVED HARD PEARS AND QUINCES

Cook first until tender in clear water as cooking in syrup hardens them. Allow equal weights of sugar and fruit, and water to cover the fruit. Dissolve the sugar in the water and bring to boiling point.

Remove the scum as it forms. Put the fruit into the jars when it is tender. Boil the syrup down until of a rich color and strain it into the jars. Cover and seal as directed for canning.

LESSON VI

FRUITS

CHEMICAL COMPOSITION *

FRUITS	WATER	PRO- TEIN	FAT	CARBO- HYDRATES	ASH
Apples	63.3	0.3	0.3	10.8	0.3
Oranges	63.4	0.6	0.1	8.5	0.4
Bananas	48.9	0.8	0.4	14.3	0.6
Grapes	58.0	1.0	1.2	14.4	0.4
Strawberries	85.9	0.9	0.6	7.0	0.6
Raspberries	85.8	1.0		12.6	0.6
Raisins	13.1	2.3	3.0	68.5	3.1

WATER	PROTEIN	FAT	CARBO- HYDRATES	ASH
Straw-berries	Raisins	Raisins	Raisins	Raisins
Raspberries	Grapes	Grapes	Grapes	Bananas
Oranges	Rasp-berries	Straw-berries	Bananas	Straw-berries
Apples	Straw-berries	Bananas	Rasp-berries	Rasp-berries
Grapes	berries	Apples	Apples	berries
Bananas	Bananas	Oranges	Oranges	Oranges
Raisins	Oranges	Rasp-berries	Straw-berries	Grapes
	Apples	berries	berries	Apples

JELLY

Jellies are made from fruits which are rich in pectine and which contain the correct amount of acid. Pectine is one of the minor carbohydrates and is sometimes called vegetable jelly. It is found in the juice, skin, and core of fruits when not quite or just ripe.

Pectine is soluble in the fruit juices but has the power

* The Tables in the book give the percentages of the various food stuffs, and also the relative place of each food under each food stuff; the food named first in every instance containing the most of the food stuff named at the top of the column.

of gelatinizing into a stiff jelly when the acid juice is heated with sugar and then cooled. The amount of acid diminishes as fruits ripen and the pectine also changes.

Fruits which have ripened fully and are quite sweet, or which do not contain pectine will not stiffen into a firm jelly. They become merely a thick, gummy paste, or syrup, quite unlike the transparent, tender, perfect semi-solid jelly, which holds its shape when turned out, yet quivers and may be cut into sparkling slivers without liquefying. But by combining these fruit juices with those of a more acid nature a firm jelly may be made.

The best fruits for jelly are currants, sour apples ripened in late summer, wild grapes, plums, low, wild blackberries, crab apples, and quinces.

Raspberries with currants; barberries with apples; pear, peach and pineapple with apples; rhubarb grown in September combined with apples are combinations which have been tried with success.

Equal measures of juice and granulated sugar warmed in the oven is the general proportion for currants and quinces; one fourth less sugar for apple and one fourth more sugar for barberries and wild grapes.

Currants, raspberries, and other juicy fruits need little or no water, merely enough to cover the pan and help in the slight heating needed to start the juice.

With apples, quinces, and other firm fruits, wash, but do not pare except to remove any defective spots; discard the seeds in quinces; add water to nearly cover the fruit, and stew until tender.

Drain and let the juice drip without pressure.

When using a mixture of fruit juices, or you are uncertain of the presence of pectine, boil a little of the juice and when cool add an equal amount of grain alcohol; insert a spoon and if a gelatinous mass appears the juice contains pectine.

When fruit is over-ripe, or gathered just after a rain and is watery, or is boiled too long, the juice is not likely to stiffen. Boiling violently causes crystals to appear after it cools, particularly in ripe grapes. Do not stir it when boiling as the scum will be mixed in and the jelly will be

tough and coarse. If the scum is not removed the jelly will not be clear. Boil not more than a quart at a time, and have everything ready; sugar heating, glasses in hot water — before boiling begins. Jelly is done when it breaks in drops or flakes from the spoon, or stiffens when dropped on a cold plate.

Follow the directions for the various kinds of jelly as given in the recipes.

After filling jelly glasses, put them on a tray and cover with cheese cloth until the jelly is firm. Then handle with care, for the jelly in hardening adheres to the glass, making it air tight around the edge. Jellies often spoil because of too great haste to see the inside texture.

Melted paraffin poured hot over the fruit will seal securely, but some prefer to cover the jelly with paraffin paper. See that the cover fits the glass, or cover it with paper cut one half inch larger than the glass top. Moisten the edge with paste and put it over, pressing it to the glass in uniform folds. Label glasses with name of fruit and date.

RECIPE, No. 24. APPLE JELLY

After washing the apples, wipe, and remove the stems and blossom end. Cut the apples into quarters, and place in a granite kettle with enough water nearly to cover them. Cook slowly until the apples are soft; crush and drain through a sieve; then lay a cheese cloth over a bowl; turn in the juice; tie the corners of the cheese cloth together and hang it where it may drip. Measure the juice and boil it fifteen minutes. Add an equal measure of heated granulated sugar and boil slowly five minutes. Skim and pour into sterilized glasses.

RECIPE, No. 25. PLUM JELLY

Put the plums, which may be either damsons, red, or beach plums, into the preserving kettle, with water to cover. Heat slowly, and simmer until the plums will mash readily, then turn into a flannel jelly-bag or a cheese cloth strainer as for apple jelly, and drip until the pulp is dry. Boil the

juice rapidly twenty minutes, skimming often. Remove it from the fire, measure, and return it to the fire; as soon as it boils again, add as many bowls of sugar as you have of juice, and boil until it jellies, which will be fifteen or twenty minutes. Pour into tumblers, and stand aside two or three days, then cover with paper, and put in a cool, dry place.

RECIPE, No. 26. GRAPE JUICE

Select sound, sweet grapes, well ripened but not over-ripe. Wash, pick from the stems and put them into an enamel preserving pan over a slow fire. Mash with a pestle and heat, not boil, about fifteen minutes, or until seeds are freed from pulp. Lay a large square of cheese cloth over a bowl, turn in the grapes, tie the corners and hang to drip without pressure for twenty-four hours. Next morning heat juice to boiling point and turn immediately into sterilized jars or bottles and seal. This is pure grape juice; in serving dilute with water and chipped ice and sweeten to taste.

If a weaker quality is desired, allow one quart cold water to eight pounds Concord grapes. Wash, stem, heat, mash and boil fifteen minutes. Strain, cool, and press out all the juice. Allow one cup sugar to one quart juice, boil fifteen minutes, remove scum, fill sterilized bottles, and seal.

TO SEAL BOTTLES WITH WAX

Allow equal parts of shoemaker's wax and rosin. Melt them in an old tin convenient to keep the mixture. Fill bottles with hot fruit, press the corks in tight, — use new or unbroken corks, — dip the corked bottle in the mixture until the edge of glass is covered. Reheat the mixture whenever used.

Questions on Lessons IV, V, and VI

What is the greatest food stuff	from mould and decay?
in apples and strawberries?	Why should vegetables in cans
Why should we sterilize all	be boiled more than once?
utensils in canning?	Can you tell what makes germs
Why should all fruit be free	grow?

LESSON VII

COOKING

Cooking is the preparation of food by the aid of heat. The word is derived from the Latin *coquo*, meaning "to boil, bake, seethe, dry, scorch, or ripen." Cooking is usually done by the application of heat. The ripening and the drying process which some foods undergo by the direct heat of the sun, is a kind of natural cooking. The heat of the living animal also does its part in preparing other varieties of food for our use; but the greater part of the food we eat is cooked or prepared for us by the more rapid action of artificial heat.

We cook our food for several reasons.

To develop and improve the flavor and odor.

To make it look more attractive.

To have a part of it warm.

To kill any parasites and disease germs.

To make some foods more digestible and thus more nourishing.

To keep foods which are perishable that we may enjoy them when out of season.

The proper cooking of much of our food depends also upon the use of water or some other liquid, combined with heat, and upon the free action of pure air during the process of cooking.

METHODS OF COOKING

Heat is applied to food through hot air, hot liquids, and hot metals.

The hot air methods are:

Broiling or Grilling; cooking over glowing coals, or under gas flame.

Roasting ; cooking before glowing coals, in open pan.

Baking ; cooking in air radiating from hot oven, sometimes called roasting when applied to meat.

The hot liquid methods are :

Boiling ; cooking in boiling water, or other liquid.

Simmering or Coddling ; cooking slowly in large amount of water, below boiling point.

Stewing ; cooking slowly in small amount of water below boiling point.

Steaming ; (a) moist, cooking in steamer directly over steam,
(b) dry, cooking in double boiler surrounded by steam.

Frying ; cooking by immersion in deep hot fat.

Saut  ing ; cooking in small amount of hot fat and turning food over.

The hot metal methods are :

Pan Broiling ; cooking in a very hot pan, slightly greased.

Pan Baking ; cooking on hot griddle with little or no fat.

Other methods are combinations of two or more.

Braising ; stewing and baking in rich gravy in covered pan.

Pot Roasting, or Smothering ; stewing in little water in closely covered pan with frequent boiling down and browning.

Fricasseeing ; frying and stewing or Brown Stew ; stewing and frying ; White Stew.

En Casserole ; broiling or frying ; then baking in rich gravy in covered dish suitable for serving.

Planking ; broiling or baking on hot board ; sometimes before a hearth fire.

Toasting ; browning of bread or cooked starchy mixtures over the fire.

Popping ; quick bursting of corn kernels over hot fire.

Baking is also done in a Dutch kitchen, before a hearth fire, in hot ashes, over hot stones, and in steam from seaweed, closely covered.

Fireless Cooker ; short boiling on stove, then stewing or cooking at low temperature for a long time in the confined heat of a cooker, and sometimes finishing with quick baking.

TEMPERATURES USED IN COOKING

Freezing point of Water, 32° Fah.

Mixture of Rock Salt and Ice, 15° to 20° Fah.

Blood temperature, 98.6° Fah.

Simmering point, 185° to 210° Fah.

Stewing and Coddling, 185° to 210° Fah.

Boiling, 212° Fah.

Steaming, moist, 212° Fah.

Steaming, dry, 200° to 210° Fah.

Frying, 350° to 400° Fah.

Baking, 300° to 450° Fah.

Roasting and Broiling, 800° to 1000° Fah.

Remember the temperature increases in this order: simmer, stew, steam, and boil; then bake, fry, roast, and broil.

Proteins coagulate in a temperature of 158° to 167° Fah.

Starch gelatinizes at 149° to 185° Fah.

Ferments are destroyed at 160° and up.

The temperatures given in this book are in Fahrenheit, the scale we use in our daily life. However, many consider the Centigrade reading as more scientific as it is used in advanced research work. To change a temperature reading from Centigrade to Fahrenheit, multiply Centigrade temperature by 1.8 and add 32°, which will give the equivalent temperature in Fahrenheit. Thus a temperature of 100° Centigrade is equivalent to 212° Fahrenheit.

RECIPE, No. 27. BAKED POTATOES

Select potatoes of uniform size. Wash and scrub them well. Bake in a clean, hot oven from thirty to forty-five minutes, or until soft. Break the skins to let the steam inside escape. Serve at once, uncovered. Should there be any potatoes left over, peel them that they may be in better condition to warm for another meal. Baking may be hastened by washing the potatoes in hot water.

Sweet potatoes. Sweet potatoes may be baked by following directions for white potatoes.

RECIPE, No. 28. PARMESAN POTATOES

Take as many potatoes as desired, scrub them well and be careful that they have no dark spots. Bake them in a hot oven, but not so hot that they will become hard or burn. When done cut in halves, scoop out the potato into a hot bowl. Mash it well, adding butter, salt, pepper and grated cheese to taste. Refill the skins and heat again before serving.

LESSON VIII

WATER

While water cannot in the usual sense be called a food it fills one of the most important offices in the nutrition of the body, and ranks next to oxygen as a supporter of life. We may go without food for several days, but only a short time without water. Water constitutes about three fourths of the whole body. It forms a large part of the muscular tissue, and is found even in the bones. It abounds in the blood and secretions, giving them the necessary fluidity, thus enabling them to dissolve the important materials they contain, carry them over the body, and clean away the used-up material.

Water is the great regulator of animal heat, for by its evaporation in perspiration it prevents or reduces any excessive temperature of the body.

We are constantly losing a large quantity of water through the lungs, skin, and kidneys. This loss must be supplied, or life cannot go on. A large amount of water must be taken as a beverage, and care must be taken to have it free from any harmful substance. Although it is found in all kinds of solid food, yet there are many foods to which it must be added in cooking.

When there is any question about its purity, boil the water before using it. Pour it back and forth in pitchers that it may become aerated, and cool before using. Water is the cheapest of the five food stuffs.

As a beverage, and for all culinary purposes, water should be freshly drawn, and if from a faucet or pipe, it should run long enough to empty the pipe before drawing it for use. When it is desirable to have it very cold, draw it into bottles, cork it tightly and lay it on ice. This is better for most people

than to put ice into the water. Water from the hot water boiler should never be used for cooking. When boiling water is specified with food, it should be water that is actually in a state of ebullition and the water should be used at the first boil. Keep a small stew-pan with a lip purposely for cooking water as it can be cleaned more easily than anything with a long spout, like the ordinary tea-kettle, which is really only suitable for water to be used in cleaning. The flavor of all beverages, cereals, vegetables, etc., will be greatly improved by observing this simple rule.

BOILING, OR COOKING IN WATER

Cooking in a boiling liquid is the most common form of cooking, and water is the liquid usually employed.

Nearly every kind of food needs the action of water, or some other liquid, combined with heat, to cook it in the best manner.

Some seeds and grains, when fully grown, lose by the ripening process nearly all the water that was in them, and become very hard. They need to absorb a large amount of water in cooking to replace that which they have lost.

Other foods contain so much water that simply heating them cooks them sufficiently, while still others are improved by having the water they contain taken away.

Some foods have flavors which are affected by the temperature of the water and the length of time they remain in it.

To understand the different effects of cold water and boiling water upon food, and also the time required for cooking in water, we need first to learn about boiling water. When we cook in boiling water, we really cook the water first; that is, we heat or boil it.

Put a cup of cold water in a saucepan over the fire, and see what happens. When it becomes so hot that we cannot bear the fingers in it take the temperature. This is scalding hot water. Soon tiny bubbles form on the edges and bottom of the pan. This is the air in the water which expands by the heat. These air bubbles disappear as they reach the colder water near the top, and the cold water being heavier goes to

the bottom. This makes a slight motion in the water which is called simmering, and which is often mistaken for boiling. Water simmers at about 180° Fah.

After a while all the water is very hot, that nearer the bottom is changed into steam, large bubbles of steam rise rapidly and soon break above the surface, making quite a commotion or bubbling all over the top, and we say "the water boils."

We take the temperature, and find it boils at 212° Fah. As the bubbles break the steam escapes, and when it comes in contact with the cold air above and outside the kettle it is changed, or condensed, into a fine mist. We call this mist steam, but it is water vapor; the real steam is invisible.

Thus we learn that boiling is the changing of water or liquid into steam by the action of heat sufficient to cause commotion or bubbling on the surface.

Any solid must first be melted into a liquid before it can boil. We do not really boil our potatoes; we cook them in boiling water.

After boiling the water some time we take the temperature again, and find the water is no hotter than 212° Fah. We increase the fire to make the water boil faster, and the force of the steam lifts the cover, and the water runs over and spatters the stove; but we find the water is no hotter. The excess of heat escapes in the steam, and in ordinary kettles it is impossible to retain the whole of it.

Cover the kettle, and some of the steam condenses into water on the inside of the cover, drops back again into the kettle, and gives up its heat. So although we do not gain any greater degree of heat by boiling rapidly, yet by keeping the cover on more of the heat is kept inside. The steam, as it changes from a vapor to a liquid, gives back the heat that it has, and by keeping in the steam we can economize heat. The water does not evaporate so quickly when covered.

We cool a portion of the boiling water, and find it tastes flat. This is because the gases, or air, which gave it a fresh taste have escaped.

If we let the water all boil away, or be changed into steam,

we find only a rim or deposit of brown scum on the edge of the pan.

We learn by this experiment in cooking or boiling water —

That it boils at 212° Fah., or when it bubbles all over the top ;

That when once it boils all over it becomes no hotter, and fuel and heat are wasted when it boils at a galloping rate ;

That the kettle should never be so full that the water, as it expands in heating, will boil over ;

That it loses its freshness by long boiling, and should be used at once ;

That it boils away faster if uncovered ;

That in time it will all evaporate and pass off as steam, and more must be added as needed ;

And, lastly, that the water leaves a deposit on the kettle, which, if not removed, will in time affect the taste of the water.

If water boils over, it clings to the outside and browns the kettle.

When cooking in boiling water put fresh cold water into the stewpan and bring it to the boiling point quickly. Put in the food to be cooked ; this will check the boiling a few minutes, but watch and when boiling begins reduce the heat till just sufficient to produce bubbling, — except for such foods as require rapid boiling like rice and macaroni. If food is put into a cold kettle and boiling water poured over it from a tea-kettle, the kettle as well as the food takes away the heat from the water and boiling is delayed ; and if the water has stood some time in the tea kettle it is not fresh.

Reckon the time from the moment boiling begins, not from the time you put the food into the kettle.

Water boils at a higher temperature when there is sugar or salt or anything in it to increase its density.

Water boils at a lower temperature when the pressure of the air upon the water is diminished. Before a rain the pressure of the air is lessened, because the air when filled with vapor is lighter. Things burn on more quickly at such a time because the water evaporates more rapidly. The pressure of the air is less the higher we ascend above the level of the sea, and at an elevation of 14,150 feet water boils at 188.6° .

Cooking in boiling water requires a much longer time, therefore, in mountainous regions, for the water boils so quickly that it has less heat than at lower altitudes, where it is subject to greater pressure.

RECIPE, No. 29. LEMONADE WITH BOILING WATER

1 pt. water.	3 lemons.
1 c. sugar.	1 qt. cold water.

Wash and scrub the lemons; shave off thin portions of the yellow peel from one lemon; put it and the sugar into the cold water and boil gently ten minutes.

Cut the lemons in halves; lay aside six slices; remove the seeds; squeeze out the juice; pour the boiling syrup into the juice and when cold strain out the peel; add cold water and in serving put a lemon slice and one tablespoon of chipped ice into each glass.

Cooking the sugar and peel in the water improves the flavor.

RECIPE, No. 30. TEA

Boiling water draws out some flavors which are desirable, if they are simply drawn out and not boiled. We pour boiling water on tea to draw out the flavor. If the tea is steeped, the infusion is agreeable; but if boiled, other substances — tannin, etc. — are drawn out, which are not only unpalatable but unwholesome. *Infuse* means “to pour into;” *steep* means “to soak.” Infuse, or steep, tea; never boil it. Tea should be steeped in an earthen teapot, never in tin. The water should be freshly boiled.

To make tea, first scald the teapot. Allow one teaspoon of tea for one cup of water. Put the tea into the hot teapot; pour in the boiling water; cover, and let it steep five minutes. At the table cover the teapot with a hood.

RECIPE, No. 31. COFFEE

2 tbsp. coffee to 1 c. boiling water.

Reduce the proportion of coffee, when several cups are required. Mix the coffee with one clean egg shell or one inch of

fish skin. Put it in the pot, add the boiling water, and boil only five minutes. Set it where it will keep hot but not boil. Add one half cup of cold water. Pour out a little and pour it back, to clean the ground from the spout.

RECIPE, No. 32. COCOA SHELLS

$\frac{1}{2}$ c. shells, 1 pt. freshly boiling water, and 1 pt. of milk.

Boil the shells and water ten minutes, longer will not harm, and just before serving add the milk and serve as soon as the milk is hot.

RECIPE, No. 33. CHOCOLATE AND COCOA

1 c. milk scalded.	1 oz. or a square of chocolate.
1 c. hot water.	1 tbsp. sugar.

Cut the chocolate into small pieces and put it with the sugar and two tablespoons of the water into a saucepan. Stir over the fire until smooth and glossy. Add the remainder of the water gradually, and then the milk. Serve at once. Use twice as much chocolate if a richer drink be desired. For cocoa use one tablespoon.

Water Thickened by Gelatine

Water is made solid by freezing in salt and water as in water-ices and sherbets. It is made stiff by the addition of gelatine, a substance obtained from cleaned bones, tendons, and hides of animals.

Gelatine softens and swells in cold water and dissolves in boiling water, and when the mixture is cold, it forms a stiff jelly-like substance. Fruit juices and other flavors are added with the boiling water to make the jelly more palatable.


Gelatine is also used to thicken milk, cream, and various food combinations.

RECIPE, No. 34. ORANGE JELLY

$\frac{1}{2}$ box gelatine.	Juice 1 lemon.
$\frac{1}{2}$ c. cold water.	1 c. sugar.
1 c. boiling water.	1 pt. orange juice.

Soak the gelatine in cold water until soft. Add the boiling water, the lemon juice, sugar, and orange juice. Stir till the sugar is dissolved, then strain through fine linen into moulds or shallow pans, which have been wet in cold water. If granulated gelatine is used take two and one half tablespoons for either recipe.

RECIPE, No. 35. BANANAS AND LEMON-JELLY



$\frac{1}{2}$ box gelatine.	1 c. sugar.
1 c. cold water.	$\frac{3}{4}$ c. lemon juice.
1 pt. boiling water.	1 square inch stick cinnamon.

Soak the gelatine in the cold water. Shave the lemon rind, using none of the white. Steep it with the cinnamon in the boiling water ten minutes; add the soaked gelatine, sugar, and lemon juice, and when dissolved, strain into shallow dishes. When cold, cut it into dice or break it up with a fork, put it in a glass dish in layers with sliced bananas.

Serve it with medium cream.

LESSON IX

MILK

CHEMICAL COMPOSITION

	WATER	PROTEIN	FAT	CARBO- HYDRATES	ASH
Whole Milk . . .	87	3.3	4.0	5.0	.7
Skim Milk . . .	90.5	3.4	.3	5.1	.7
Butter	11.0	1.0	85.0		3.0
Cream Cheese . . .	34.2	25.9	33.7	2.4	3.8

WATER	PROTEIN	FAT	CARBOHYDRATES	ASH
Skim Milk	Cheese	Butter	Skim Milk	Cheese
Whole Milk	Skim Milk	Cheese	Whole Milk	Butter
Cheese	Whole Milk	Whole Milk	Cheese	Whole Milk
Butter	Butter	Skim Milk	Butter	Skim Milk

Milk is the first food for infants and contains all the food stuffs, which we can separate and study each by itself. We should not think of milk only as a beverage, even though it is drunk as such, much as water. Milk is a natural food and can be used without cooking, and in many combinations of cooked food. The food stuffs are not in the right proportion for adults, as the amount of carbohydrates is small, therefore bread or cereal should be eaten with milk. Milk contains water, sugar, salts, fat, and protein in the form of albumin and casein. After it stands a while, the fat separates and rises as cream. This is churned; the particles of fat adhere and separate from the water and thus butter is formed. The sugar and salts are dissolved in the water of the milk. The casein is dissolved in fresh milk, but when the milk becomes old, and sours, it separates from the watery part and forms a thick mass which we call curd. This curd is made into

cheese. The watery part left after removing the curd is called whey.

As milk contains all these substances it is thicker than water, and when we boil it in an open pan it adheres to the pan and burns quickly. The bubbles of water in the milk, as they change into steam, rise rapidly, the albumin hardens and forms a skin-like coating; as this skin is thick and tenacious, owing to the other substances in the milk, these bubbles do not break quickly at the surface as clear water bubbles do, but stretch and climb one upon another till they run over the edge of the pan.

This skin-coating is not attractive and many persons skim it off, but as it is protein and a valuable part of the milk, it should be saved by stirring the milk while it is heating, then removing the pan when the bubbles appear on the edge, and stirring the milk until cool. This is scalded milk. Milk that is simply to be taken as hot or warm, may be heated in this way, — if you give it constant attention, — a moment's neglect may cause it to boil over or burn on.

To avoid the danger of burning on, or when the milk needs longer heating, or at a lower temperature, use a double boiler. When the whole surface is covered with air bubbles, — not steam bubbles, — the milk is hot enough though not actually boiling. The temperature of boiling milk is slightly higher than that of boiling water, and it will not boil over boiling water. Milk which is really boiled has a different flavor from that of scalded milk.

The albumin coagulates by heat; the casein coagulates quickly by the addition of an acid, such as lemon juice, vinegar, or the acid from the stomach of a calf, which is used in the form of rennet. Casein in milk coagulates naturally in the human stomach. The casein coagulates slowly by long-keeping owing to the change of the sugar into lactic acid.

RECIPE, No. 36. LEMON WHEY

Scald one cup milk in a double boiler; add tablespoon lemon juice; cook it until the curd forms, but do not stir it. When the whey has separated, strain out the curd; add one table-

spoon of sugar, or more if desired, and serve it hot or cold. This dish is especially refreshing for invalids.

RECIPE, No. 37. THICKENED MILK, RENNET CUSTARD,
OR SLIP

Put one tablespoon sugar, one eighth teaspoon salt, one teaspoon vanilla, and one rennet tablet into one pint of pure, fresh milk, which has not been scalded, and warm it to blood heat, — never more than 100° Fah. Dissolve the rennet, if dry, in one tablespoon of cold water and stir this very thoroughly into the milk. Pour the milk at once, — before the thickening process begins, — into small cups suitable for serving; stand them on a tray so that they may be lifted together without jarring the milk. Keep them in a warm but not hot place, about an hour or until the milk is firm; then check the process by putting the tray into the refrigerator.

Vary the flavoring by using coffee, melted chocolate, orange juice, spice, or beef extract. Put all coloring or flavoring into the milk before adding the rennet solution.

Serve simply, with powdered sugar and plain or whipped cream; or with mildly acid jellies, or fresh fruit juices. If served in a large dish the custard often becomes watery, when it is once broken up in serving, and any portion left over is not attractive. Individual dishes are preferable.

Rennet is sold in liquid form, in powders and tablets. It is made from a digestive substance called rennin which is found in the stomach of calves. Rennin causes the casein, or protein of milk, to thicken, thus starting the process of digestion of milk, making dishes containing it easier of digestion. It is always safer to follow the directions on the package of whatever form of rennet you are using.

Remember the important points: pure, sweet, uncooked milk, warmed, not made hot, and not disturbed after it is set.

With a pint pan of sweet milk and also of sour milk, and one cup of thick cream used as directed in the recipes, each food stuff may be studied in combination and by itself. Skim part of the cream from a pan of milk and use it to moisten the sour milk cheese; use the skim milk to illustrate scalding and

cooking milk; make rennet custard with the unskimmed milk; whip the cream and use part of it to serve with the Slip, and continue whipping the remainder until butter is formed. Scald and flavor the whey from the sour milk.

Questions on Lessons VII, VIII, and IX

- | | |
|---|--|
| What kinds of food are usually cooked over boiling water? | Why can we not live on milk alone? |
| What is Simmering? | What is a double boiler? |
| Why does milk boil over the pan more quickly than water? | How does the heat reach the food in a double boiler? |
| What is the safest way to heat milk? | |

LESSON X

MILK PRODUCTS

Cream is now separated from the milk in creameries and offered for sale as heavy cream, medium cream, and thin or milkman's cream. For making butter heavy cream is used and sour cream makes the best flavored butter. For whipped cream use medium cream or dilute heavy cream with milk to prevent the butter separating.

RECIPE, No. 38. TO WHIP CREAM

Chill the cream, put it into a large bowl, and stand the bowl in the sink, — in hot weather put the bowl in ice water. Beat with a wire whisk until it is thick, or until it will hold its shape when dropped from a spoon.

RECIPE, No. 39. TO MAKE BUTTER

Butter may be made on a small scale in the classroom. Put a pint of heavy cream into a quart glass jar, adjust the cover and shake the jar until the particles of fat separate from the water and form tiny yellow flakes, — or it may be done by whipping thick cream in a bowl with a beater.

Skim out the yellow flakes with a spoon and press out the butter-milk. Make the butter into a compact mass and wash it in cold water. Change the water until it is clear. Dry the butter in a clean cloth; turn it into a bowl; stir in one fourth teaspoon of salt; pat it into a smooth cake and set away to chill; or cut in inch cubes and put into ice water.

RECIPE, No. 40. TO MAKE BUTTER BALLS

Stand small butter moulds or paddles in boiling water for three minutes to sterilize them; then leave them in cold water until they are very cold. This will prevent the butter from sticking. Pack the butter into the mould, smooth off and turn out, — or roll an inch cube of butter between the two chilled paddles until you have a grooved oval or round shape.

Sour Milk. Milk becomes bitter and strong by long-keeping, even in the refrigerator. The custom of keeping an uncovered pitcher, or sour milk “catch-all,” on the kitchen shelf for the daily left-overs should not be allowed. Small left-overs of sweet milk, heated slightly, just a few bubbles on the edge of the pan, taken slowly when tired, before eating a full meal, or before retiring is not only a healthful practice but will dispose of much milk that otherwise would be wasted.

When sour milk is desired for griddle cakes, muffins, gingerbread and the like, put the milk in a covered dish; keep in a warm place, and let it sour quickly, using it as soon as possible. Do not go on adding indefinitely new milk to the old.

Skim Milk. Skim milk costs about half as much as whole milk and is a valuable food because although the fat has been removed the proportions of protein and carbohydrates are larger than in whole milk. It may be used for many purposes in cooking; also for diluting heavy cream.

RECIPE, No. 41. SOUR MILK CHEESE

(Curds, Bonny Clabber, Dutch or Cottage Cheese)

This is an economical and wholesome way of using large portions of surplus milk which have soured and thickened quickly. The usual method is by warming the milk slowly at moderate heat until the curd separates from the water. This takes some time and for the class lesson there is a quicker and more convenient way. Lay a square of cheese cloth

over a large pan ; measure the milk and put it into a pan large enough to contain an equal amount of water. Have the water boiling in a saucepan, pour nearly all of it into the milk ; stir quickly and test it with a clean finger, and the instant the liquid is blood-warm all through and tiny flakes of curd appear add no more water.

Stir well ; if the water still looks milky, add more hot water or much of the curd will be left in the water ; if the curd is made too hot it will be hard and crumbly. Draw the corners of the strainer cloth together and let the whey drain out. Then tie them ; hang the cloth over the short-armed rack which should be near the sink, and let it drip without pressure into the pan below. When dripping has ceased and there is a firm ball of curd in the cloth, turn out into a bowl. If stringy or so hard that it is a mass of crumbs, press it through a strainer with a wooden masher. Season with salt and stir in sufficient cream or melted butter to moisten it so you may pack it smoothly into small cups ; — or shape it into small balls. Vary the flavor by stirring in minced parsley, cress, or pimientoes.

Cheese is a highly concentrated protein food and should be combined with milk, rice, bread or other starchy foods. It is a substitute for meat and costs much less. A dish of macaroni with milk and cheese is too rich to be served with hearty meat, but combines well in a made over dish of fish or meat, or as the chief dish at luncheon.

LESSON XI

EXPERIMENT WITH STARCH

If thin slices of raw potato are soaked in cold water, after a while a sediment is found in the pan. This is starch, which has dropped out of the cells which were cut by slicing. This sediment may be purified and dried, and then it will be like the pure starch of commerce.

Pure starch is a fine white powder and is found enclosed in cells in the various grains, seeds, and vegetables. The starch commonly used in cooking is made from potatoes and corn.

Wet a teaspoon of cornstarch with a little cold water. It appears to mix with the water, but after standing a short time the starch is found at the bottom of the bowl, and the water is clear again, showing that it has not united with the starch; but by stirring this wet starch until a smooth paste is formed, and pouring it quickly into boiling water, we find that the membranes of the cell walls soften and burst; the starch grains swell and absorb the water; and the fine powder inside unites with the boiling water.

We learn from this experiment that cold water does not affect starch; and that boiling water is absorbed by the starch grains, causing them to swell and form a thick pasty mass, which when cold is something like jelly. We call this change in the starch, hydrating or gelatinizing the starch. Starch is from the German word, *stärke*, meaning "stiff."

This experiment teaches us the first important principle of mixing dry and liquid ingredients and for boiling starchy foods: Any starchy food in the form of a powder, like flour or cornstarch, when it is to be used as a thickening, should first be wet with a little cold liquid to form a smooth paste. Then add more cold water until it is thin

enough to pour. Stir it quickly into rapidly boiling water, and the grains will burst uniformly.

If boiling water be poured upon fine dry starch, the grains are so compact it will not reach all of them. Some will burst more quickly than others, some will not burst at all, and the mass will be lumpy.

But all other starchy foods, like rice and other whole grains, vegetables, tapioca, etc., should be put directly into boiling water.

Starch in its uncooked, insoluble state is not easily digested. All starchy foods should be moistened with a sufficient amount of liquid, and subjected to a great degree of heat, that all the grains may swell and burst.

To Wash Rice. Use a colander or coarse strainer, that the sediment may go out with the water. If washed in a bowl and the water merely turned off, the sediment remains with the rice. Set the strainer into a pan of cold water and rub the rice, still in the strainer, with the fingers; change the water three times or until clear; then the rice is clean.

RECIPE, No. 42. BOILED RICE

1 qt. or more of water.
 $\frac{1}{2}$ c. rice.

$\frac{1}{2}$ tsp. salt.

Put the water into a large stewpan and set it where it will boil rapidly. Wash the rice. Turn the rice into the water slowly that it may fairly dance in the water; stir with a fork at first, to keep the rice from sticking; remove the scum. Cook steadily, uncovered, fifteen or twenty minutes according to the age of the rice; add more boiling water if needed; be careful not to let it boil all out. Test the grains often after fifteen minutes and the moment they may be mashed between the thumb and finger, or are soft to the taste, turn them at once into a colander to drain. Save the water. If cooked too long and the starch has thickened the water and the grains stick together, pour boiling water through them to make each grain distinct.

Set the colander in a pan; keep it hot in the hot-closet or on

the back of the stove ; stir it with a fork before serving to let the steam escape.

Serve it in place of potato, — not with it, — as an accompaniment to lamb, veal, or chicken. If served without meat or gravy, season with butter. Some of the protein and mineral matter, of which rice has but a small amount, escape into the boiling water, especially when the rice is boiled too long.

RECIPE, No. 43. LEMON SAUCE

2 c. hot water.	Grated rind and juice
1 c. sugar.	of 1 lemon.
2 tsp. cornstarch.	1 tbsp. butter.

Mix the sugar and cornstarch thoroughly ; add the boiling water. Cook eight or ten minutes, stirring often, add the lemon rind and juice, and the butter. Stir until the butter is melted and serve at once. If the water boils away and the sauce becomes too thick, add more hot water till of the right consistency. By mixing the cornstarch with the sugar, the boiling water may be poured directly upon it without making it lumpy. Serve on boiled rice.

RECIPE, No. 44. SNOW BALLS

Wring small squares of thin cloth out of hot water, lay them one at a time over a half-pint bowl. Spread with cooked rice, lay half of a canned peach in the center, fill the cavity with rice, draw the cloth around the peach till it is covered with the rice, then tie tightly, and steam them ten minutes. Remove the cloth, turn the balls out and serve with the peach syrup heated and flavored with butter.

LESSON XII

RICE

CHEMICAL COMPOSITION

WATER	PROTEIN	FAT	CARBOHYDRATES	ASH
12.3	8.0	.3	79.0	.4

Rice is the seed of an annual cereal grass, cultivated on irrigated or inundated land in warm climates. It is the chief food of people in eastern Asia. A large part of our supply comes from the Gulf states, South Carolina formerly taking the lead in its production, but Louisiana and Texas are now the greatest producers.

South Carolina rice is long and slender and of superior quality. Japan rice is short and oval.

The husk and bran are removed and the grains are polished, thereby losing much nutritious material. Unpolished rice is brownish in color, less attractive than the polished, but the flavor is fine and it is considered the more nutritious.

Rice is rich in starch, the grains are small with but little cellulose and are digested easily, and the rice is nearly all assimilated. But it absorbs so much water in cooking, that a large portion must be eaten to get a large amount of nutriment.

As it has but a little protein, rice should not be eaten alone; but combined with meat, fish or cheese it is suitable for a luncheon or dinner, and with eggs, milk and sugar, for desserts or supper dishes.

It has no distinctive flavor and needs onion, tomato, peppers or some of the many fruits to make it more palatable. It combines well with all varieties. Rice lacks fat and we naturally supply it in the butter or cream we eat with it; this

makes it valuable for a summer diet, and at that time we may well use it in place of the richer cereals for breakfast.

Much of the protein and mineral matter is lost if the water in which it is cooked be thrown away; therefore steaming is the most economical method. But when boiled the water may be utilized in mixing bread and as a thickening for soups and sauces, or as a gruel.

Rice keeps for a long time, takes but little room, is clean, easily cooked, and a convenient substitute for potato.

Rice should be cooked thoroughly, but not overcooked, for the pasty mass of overcooked rice is not easily masticated.

The proportion of water will vary, older rice taking more than the fresh in steaming. One cup of rice will usually absorb two and one half cups of water, but when milk or stock are used three cups will be required.

The best rice is of a yellowish shade with but little starch-dust adhering.

Broken rice may cost less but the cooked product is not so attractive as that from the whole grains.

This lesson illustrates the effect of slow cooking and necessity for combining foods to improve their flavor. Also how to study foods and classify what you learn about them.

RECIPE, No. 45. CREAM RICE PUDDING

6 tbsp. rice.
6 tbsp. sugar.

1 qt. milk.
 $\frac{1}{4}$ tsp. salt.

Pick over and wash the rice. Put it in a shallow baking-dish. Dissolve the sugar and salt in the milk, add the nutmeg, and pour it over the rice. Bake slowly the first half hour, stirring often, then increase the heat and cook until the rice is tender and slightly browned. Serve hot with butter. Raisins or citron, sliced fine, may be added, if preferred.

ARROWROOT, SAGO, AND TAPIOCA

These prepared starchy foods come to us from tropical countries, and are used in ways similar to those of corn-starch which is made from native corn.

Arrowroot is made from the rootstalk of a West Indian plant; that from Bermuda is made and shipped with special care, has a delicate flavor, and is used largely in dishes for invalids.

Sago is derived from the pith of the sago palm. After the trees are felled and split the starch is washed out and allowed to settle; then dried and granulated and we buy it as pearl sago. The tiny pearl-like pellets retain their shape in cooking and are attractive in the egg and milk mixtures in which they are commonly used.

Tapioca is the best known of these prepared starchy foods. It is made from the tubers of the South American cassava plant. These are grated and the poisonous juice is washed away, the starch is separated from the cellulose, then is collected and dried on hot metal plates. In drying most of the starch grains are ruptured.¹ Tapioca is sold as flake and pearl tapioca.

It is not necessary to soak tapioca in cold water before cooking. If the flake tapioca is large and uneven pound it until fine and uniform. Tapioca is nearly pure starch, which is not soluble in cold water; the starch grains are not enclosed in a tough membrane which needs long soaking to soften it before the starch can be released, neither are the grains of starch finely divided like those in flour and cornstarch and they do not need cold water to separate them.

Being destitute of protein and fat, tapioca like all purely starchy foods should be combined with butter or cream, milk, eggs, or meat juices.

The flavor is somewhat insipid and fruit juices are used to make tapioca more palatable. Eaten with sugar and cream such combinations afford delicious summer desserts.

Sago and tapioca are used to thicken soups: they give a consistency without destroying the transparency.

RECIPE, No. 46. APPLE TAPIOCA PUDDING

Pick over and wash three fourths cup of pearl tapioca; put it into top of double boiler; add one teaspoon salt and

¹ See Food and Dietetics, Hutchinson, page 236.

one quart boiling water. Cook five minutes directly over the heat, stirring constantly to prevent sticking. Then put it over boiling water and cook about one hour or until transparent, stirring often.

Wipe, core, and pare seven tart apples, medium size, and put them in a round enamel pudding dish. Fill the cores with sugar, add one tablespoon lemon juice and a little grated rind. Pour the hot tapioca over the apples and bake till the apples are soft. Serve hot or cold with sugar and medium cream, not whipped.

Questions on Lessons X, XI, and XII

What is cream?

we do meat?

What is casein?

How is butter formed?

Why do we add water to boil rice?

How do rice and milk combine to form a good ration of food

Why can we not bake rice as

stuff?

LESSON XIII

EXPERIMENT WITH ALBUMIN OF EGGS

CHEMICAL COMPOSITION OF EGGS

WATER	PROTEIN	FAT	ASH
65.5	13.1	9.3	0.9

Albumin is a substance found in many foods in both solid and liquid forms.

The white of eggs is nearly pure albumin. The yolks contain a smaller portion of it. The albumin in the white of an egg is in a clear, liquid form; but if we put an egg into boiling water, the white soon becomes opaque, thick, and creamy, then tough, and finally the white is quite hard and brittle, and the yolk dry and mealy, or easily crumbled. The two kinds of albumin in the egg coagulate at 122° and 166° Fah.

Eggs are also cooked in hot milk. When we break an egg, we find the white is soft and without form, and the yolk seems round and firmer than the white; but if we break the film or membrane on the outside of the yolk we find that it, too, is soft and liquid. By beating, we can mix the yolk and white, and be unable to distinguish them. Sometimes we want to use the two parts separately, and it is an art to break and divide an egg, and not mix the yolk with the white. When eggs are cooked in milk, the albumin in the egg thickens, and if cooked slightly, and stirred constantly, forms a smooth, soft, creamy mass. If cooked longer, and without stirring, it becomes thick and solid; but if cooked too long the casein and albumin become hard, and separate from the watery part, or the mass curdles.

Eggs cooked in milk, and seasoned with salt, pepper, and butter, are called poached eggs. When they are sweetened we call the mixture a custard.

When eggs are eaten raw, or cooked in any way in which the result is to be a smooth, soft mass, the thick white substance uniting the yolk and white should be removed before cooking, unless the cooked mixture is to be strained, as in soft custard. This substance hardens into a lump, and it is unpleasant to find it in what would otherwise be a smooth mass. In eggs cooked in the shell, or cooked hard as in cake, it is not perceptible.

RECIPE, No. 47. DROPPED OR POACHED EGGS ON TOAST

Toast a slice of bread for each egg and trim neatly. Have a clean shallow pan nearly full of salted, boiling water. Remove all the scum and let the water simmer. Break each egg carefully into a saucer, and slip it gently into the simmering water. Dip the water over them with a spoon, and when a film has formed over the yolk and the white is firm, take each egg up with a skimmer, drain, trim off any rough edges, and place it on the toast. Sprinkle salt and pepper on each egg.

RECIPE, No. 48. SOFT-COOKED EGGS

Put the eggs into a stewpan, half full of boiling water, and cover; let them stand from six to ten minutes where the water will keep hot (180°), but not boiling. The white should be soft and jellylike, and the yolk soft but not liquid. If cooked in boiling water, cook from three to five minutes.

RECIPE, No. 49. HARD-COOKED EGGS

Cook them twenty minutes, in water just bubbling. The yolk of an egg cooked twenty minutes is dry, mealy, and easily digested; but cooked ten minutes in rapidly boiling water, it is tough and takes longer to digest.

RECIPE, No. 50. SOFT CUSTARD

1 c. milk scalded.
1 egg.

1 tbsp. sugar.
 $\frac{1}{2}$ tsp. flavoring.

Beat the egg to a froth; stir in the sugar and salt; add the hot milk and mix well. Pour back into double boiler and

stir constantly until the foam disappears, the custard coats the spoon, and it feels thick and smooth like cream. Strain through a gravy strainer; cool quickly; add flavoring, and serve as a sauce with rice.

RECIPE, No. 51. SOFT CUSTARD (YOLKS ONLY)

1 pt. milk.	$\frac{1}{4}$ tsp. salt.
Yolks of 3 eggs.	$\frac{1}{2}$ tsp. vanilla.
6 tbsp. sugar.	

Scald the milk. Beat the yolks; add the sugar and salt, and beat well. Pour the hot milk slowly into the eggs, and when well mixed pour all back into the double boiler, and stir constantly till smooth and thick like cream. Strain, and when cool add the flavoring. Do not stir the egg into the hot milk, as there is danger of curdling, and a part of the egg will be left in the bowl. Scalding the milk hastens the process, so that less stirring is required. When nearly thick enough, the foam on the top disappears, and the custard coats the spoon; but the surest test is the sensation that the custard is thicker as the spoon goes through the mass.

RECIPE, No. 52. CUP CUSTARD

Scald one pint of milk. Beat yolks of two eggs until smooth; add four tablespoons of sugar, one quarter teaspoon of salt, and then the whites of the eggs beaten until foamy, but not dry. Pour on the hot milk, mix well, and turn into small custard cups. Place the cups in a pan of hot water and bake in a moderate oven until the custard puffs up and is firm, or a knife inserted will come out clean. While it is not necessary to beat eggs much for a custard, as our purpose is to have a smooth texture merely, not one light and porous, as in cake, it is well to beat yolks and whites separately, as the frothy surface from the beaten whites helps the custard to brown better, and gives a more delicious crust. Cup custards should be made from fresh unskimmed milk. Be careful not to over-bake them or they will be like whey.

LESSON XIV

STEAMING, AND OTHER FORMS OF COOKING IN BOILING WATER

Some starchy foods need rapid cooking in boiling water, directly over the fire. The danger of burning them is avoided by using plenty of water.

Sometimes it is desirable to cook more slowly than we can in boiling water, and some foods require only a limited amount of water; or it may be they are sticky and glutinous, and it would be inconvenient to be constantly stirring them to prevent burning. It is then better to cook either over boiling water or by steam.

This method is sometimes called *Dry Steaming*. Puddings, brown bread, mushes, custards, and other soft, sticky, glutinous mixtures are often cooked in a covered pail or mould, which is placed in a kettle of boiling water. There should be a trivet or muffin-ring under the pail to keep it from the bottom of the kettle and allow the water to be under as well as around it. The kettle should be covered closely to keep in the steam, and the water kept boiling steadily the required time. The heat is conveyed from the boiling water through the boiler to the food. The temperature in the inner pail is less than that of boiling water, but it is hot enough to cook the mixture. It takes a longer time than some other ways of cooking, but if the fire be prepared rightly, and the supply of water sufficient, it needs less attention. It is an economical and satisfactory method, answering well the first great purpose in cooking, — that of developing flavor with little loss of substance.

A double boiler is a utensil made for cooking on this principle. It has two boilers; the upper one, holding

the food, fits tightly half way down into the lower one, which contains the boiling water. The steam is partially confined, and as it changes from the gaseous to the liquid form, or condenses on the inner boiler, it gives up its heat sufficiently to cook the food.

These modes of cooking are often called steaming, but they are only other forms of boiling; the cooking by real steam is a very different process. Superheated steam is forced through pipes into a receptacle containing the food, and in this way a greater degree of heat is obtained. This is the method used in canning factories.

Moist Steaming. In real steaming as it is commonly done, a steamer or covered pan with perforations in the bottom is placed over boiling water, the food placed in it, and kept entirely out of the water, but in direct contact with the steam, which, coming through the perforations, condenses, gives up its heat, and cooks the food. Some vegetables, fruits, meats, and other foods or mixtures which have sufficient moisture in themselves are cooked in this way. Watery vegetables are made drier; tough, dry meats are softened, and made tender; and flour mixtures have a different flavor from that obtained by dry heat or cooking in water. This method is moist steaming, the steam conveying the heat directly to the food. Moist steaming is also a convenient way to re-heat cooked foods such as stale bread and cake, left overs of fish, meat, and vegetables.

In this lesson we are to learn more about starch as it is found in grains like oatmeal; also about a kind of protein contained in grains and called *gluten*, because when dry it is tough and sticky like glue.

These grains are hard and dry. Many things which have dried in ripening, need a large amount of water to swell and soften them. If we were to cook oatmeal in the oven, without anything else, as we did the baked potatoes, it would be harder and drier than it is now. But the potatoes become softer by baking.

If we wanted a thin gruel of oatmeal we should cook it in a large quantity of water until the starch and gluten were swollen and softened; but when we make oatmeal mush

we want to have it more like solid food than pasty gruel. We cannot drain off the water as easily as we did from the potatoes, so we must be careful to use only so much water as is needed to swell and soften the starch and gluten. Oatmeal, for mush, requires four times its bulk of water; fine oatmeal, a little less.

We use boiling water because oatmeal is not a fine powder like flour, and the grains will separate easily without being first wet in cold water, and because the boiling water bursts the starch grains quickly, and begins at once to cook them. If we put the meal into cold water, the starch will come out into the water, and make it gluey and pasty. This thickened, gluey water cannot soften the gluten quickly, so it takes a longer time to cook, and it always has a raw, pasty taste. We add salt because there is not enough in the grain, and then we must cook it until the gluten is softened thoroughly. Cook it rapidly at first, directly on the stove, about ten minutes, to burst all the starch grains. When the water is nearly absorbed, place the pan into, or over, another of boiling water. The steam will keep the water in the meal hot enough to soften the gluten, but not hot enough to boil and waste away and so make the mush too dry; and this slow cooking will soften the gluten more thoroughly than rapid boiling, and develop a better flavor.

RECIPE, No. 53. OATMEAL MUSH, WITH BAKED APPLES

$\frac{1}{2}$ c. coarse oatmeal.
 $\frac{1}{2}$ tsp. salt.

2 c. boiling water.

Put the salt and water into the upper boiler. Place it on the stove and when boiling, add the oatmeal and boil rapidly ten minutes. Stir occasionally with a fork; then place it over boiling water, and cook from forty minutes to one hour. Serve with baked or steamed apples, and cream and sugar.

Fine hominy and granulated wheat are cooked in the same way, but they require only three times as much water as meal.

Whole or cracked wheat requires five times as much water as meal, and should cook four or five hours.

Steamed Apples. Wipe, core, and pare the apples. Place in a steamer and cook until soft.

CEREALS

CHEMICAL COMPOSITION

CEREALS	WATER	PROTEIN	FAT	CARBO- HYDRATES	ASH
Corn Meal	12.5	9.2	1.9	75.4	1.0
Oats (Breakfast food)	7.7	16.7	7.3	66.2	2.1
Rye Flour	12.9	6.8	.9	78.7	.7
Barley	10.9	12.4	1.8	72.5	2.4
Rice	12.3	8.0	.3	79.0	.4
Buckwheat	13.6	6.4	1.2	77.9	.9
Macaroni	10.3	13.4	.9	74.7	.7

WATER	PROTEIN	FAT	CARBO- HYDRATES	ASH
Buckwheat	Oats	Oats	Rice	Barley
Rye Flour	Macaroni	Corn Meal	Macaroni	Oats
Corn Meal	Barley	Barley	Rye Flour	Corn Meal
Rice	Corn Meal	Buckwheat	Buckwheat	Buckwheat
Barley	Rice	{ Macaroni	Corn Meal	{ Macaroni
Macaroni	Rye Flour	{ Rye Flour	Barley	{ Rye Flour
Oats	Buckwheat	Rice	Oats	Rice

Cereals are the edible seeds of several varieties of grasses; "the gift-bearing grasses," they have been called, because their seeds are the most valuable and widely distributed food for man.

Wheat, corn, oats, rice, rye, barley, and millet are the best known, and grain is a name common to all.

They contain all the food stuffs; they have a large proportion of starch, and while in the grain they may be kept a long time. The amount of protein and mineral matter is small, but valuable in quality and economical, for cereals are inexpensive as compared with other foods containing protein.

Many food products are made from cereals; among them are:

Flour, a finely ground product, principally from wheat, but corn, rye and rice are also made into flour.

Meal is coarsely ground from wheat, oats, corn, and rye; Graham flour is really wheat meal.

Breakfast Foods are made from all the grains but chiefly from wheat, oats, corn, and rice. The outer skin is first removed and then the grain is used in several forms; *whole or broken*, as in hulled corn or samp, coarse hominy, cracked wheat, whole oats or groats, rice, and pearl barley; *granulated or steel cut*, as in oat meal, and various granulated wheat preparations, granulated corn meal, and fine hominy; *ground coarse* by crushing, as in wind-mill ground corn meal, rye meal, and barley flakes; *steam cooked*; these are first cooked, then dried and rolled as *rolled oats*, or shredded and baked as in *shredded wheat*, or dried and flaked as in *rice* and *corn flakes*. The last two are served without further cooking as are also several puffed and flavored preparations, as puffed rice and wheat, malt food, and grape nuts.

Cereals are invaluable food stuffs.

They furnish heat to keep us warm, power or energy to make the heart and lungs work and for us to do many kinds of muscular and mental work.

To Cook Cereals. Allow two cups boiling water to one cup steam cooked oats, one and one-half cups to steam cooked wheat, and from three to four cups to the fine granulated or meal-like cereals. Stir the cereal into the rapidly boiling water, in top of double boiler, and cook directly over the stove for five minutes, then over boiling water; three hours for corn meal and coarse oatmeal and coarse hominy; one hour for fine hominy and granulated oats, and half an hour for all others. Allow one teaspoon salt for one quart water.

LESSON XV

TOAST

We toast bread not merely to brown it, but to take out all the moisture possible, that it may be moistened more perfectly with the saliva and thus easily digested; then we brown it to give it a better flavor. If the slice be thick and carelessly exposed to a blazing fire, the outside is blackened and made into charcoal before the heat can reach the inside. The moisture is only heated, not evaporated, making the inside doughy or clammy; and butter, when spread upon the bread, cannot penetrate it, but floats on the surface in the form of oil, and the result is one of the most indigestible compounds.

The correct way is to have the bread stale and cut into thin uniform slices, and to dry it thoroughly before browning it. Such toast, even if moistened with water or milk, may be acted upon easily and thoroughly by the digestive fluids.

Use only perfect slices of stale bread for toast. Broken pieces may be used for stuffing, puddings, and brewis. Or they may be dried and browned in the oven, then rolled and sifted and used to cover articles that are to be fried. The recipe for milk toast illustrates the use of corn starch as a thickening agent, and toast illustrates the effect of intense heat on starch.

RECIPE, No. 54. TOAST

Cut stale bread in slices one fourth inch thick. Put it on a toaster or fork. Move it gently over the fire till dry, then hold it nearer until golden brown. Serve dry.

RECIPE, No. 55. WATER TOAST

Have a shallow pan with one pint of boiling water and one half teaspoon of salt. Dip each slice of dry toast quickly in the water, then spread with butter and serve very hot.

RECIPE, No. 56. MILK TOAST

1 c. milk, scalded.	1 tbsp. butter.
$\frac{1}{2}$ tbsp. cornstarch, or 2	$\frac{1}{8}$ tsp. salt.
tbsp. flour.	

Melt the butter in a granite saucepan, add the dry cornstarch, mix well, add one third of the milk, stir well as it boils and thickens, then add more milk, stir again, and when smooth add the remainder of the milk and the salt. Pour this between the slices of toast, and over the whole. If liked very soft, dip the slices first in hot salted water.

Questions on Lessons XIII, XIV, and XV

What is the proper way to prepare toast?	What cereal contains the most protein?
What is a custard?	What cereal would be best for breakfast in the summer?
What food stuff do eggs best illustrate?	In the winter?
Why are eggs better if not boiled but cooked?	Why do we toast bread?
Why must we measure the water for cooking oatmeal?	What effect does toasting have upon the starch in bread?

LESSON XVI

FATS

Fats include butter, cream, bacon, cheese, nuts, oil and fat meat.

Fats stand at the head of heat-producing foods, and are necessary in winter and in cold climates, for they serve important uses in the body. A small amount is necessary in digestion, and indispensable to perfect nutrition.

Fat forms the principal material of certain tissues, which, by filling the spaces between the bones, muscles, and the different organs of the body, make it plump and round and give beauty to the form, oil the working parts of the body so that the joints and muscles move smoothly, and, being non-conductors of heat, keep the body warm and the internal temperature at the normal point, 98° F. An undue accumulation of fat is a disease, and disease just as surely results from a deficiency of fat.

Fats are derived from animal and vegetable sources, and are classed as fats and oils.

The oils are derived chiefly from the fruit of the olive tree and from cottonseeds.

Oils are liquid at ordinary temperature. Animal fats are solid but become liquid by heating. Butter, which is made from cream, and pork fat, as lard, have a soft texture. Beef suet is slightly harder and mutton fat is the hardest of all.

The fat of meat is a useful article of food, especially in winter. Every scrap of it, particularly of beef fat, should be used, and all that is not eaten with the meat should be clarified, or made pure and clear.

By heating the fat with water to prevent burning, or with thin slices of raw potato, the water evaporates and the

steam carries off the odors or gases. The organic matters in the fat are decomposed or deposited as sediment and adhere to the sliced potato. Clarified fat or dripping answers for many purposes in cookery, — sautéing, basting roast meat, greasing pans, and as shortening for bread, plain pastry, and gingerbread.

Strain into the clarified fat any clear, melted fat, having no water, but fat skimmed from boiled meat and soup stock should be clarified. The fat from roast pork, roast beef, sausages, and veal may be used without further heating; also bacon fat in a small amount if not too brown.

RECIPE, NO. 57. CLARIFIED FAT OR DRIPPINGS

Save any scraps or pieces of fat. Cut into half-inch cubes, put in pan, and cover with cold water. Place in an oven and cook slowly for four or five hours, or until the scraps are quite brown and the water evaporated. Several slices of raw potato put in with the fat will aid in the clarifying. When slightly cooled, strain and set away to cool.

Always clarify and strain fat after using it for frying.

PORK PRODUCTS

CHEMICAL COMPOSITION

	WATER	PROTEIN	FAT	ASH
Pork Chops	41.8	13.4	24.2	.8
Smoked Ham	34.8	14.2	33.4	4.2
Smoked Bacon	17.4	9.1	62.2	4.1

WATER	PROTEIN	FAT	ASH
Pork Chops	Smoked Ham	Smoked Bacon	Smoked Ham
Smoked Ham	Pork Chops	Smoked Ham	Smoked Bacon
Smoked Bacon	Smoked Bacon	Pork Chops	Pork Chops

RECIPE, NO. 58. BACON

Do not buy bacon by the pound, nor have it cut in thick slices if cut at the market, but purchase it by the whole

strip, freshly cured. It will keep well if the paper and burlap cover are replaced whenever opened, and is as much a necessity in the storeroom as is a supply of flour, sugar, or any other staple article of food. It has no equal as an appetizer for breakfast or in helping out when there is but a limited supply of other meat. Served with omelets or some other forms of eggs, crisp curly bacon is all the meat necessary for a summer breakfast. It is invaluable to boil with greens or other vegetables. The fat of bacon is one of the most easily digested forms of fat, as the curing and smoking seem to have given it some qualities which render it less objectionable than when fresh. Many physicians prescribe it in place of cod liver oil.

Shave off the hard, lean strip from bacon, also the smoked edges and rind as far back on the strip as you require for one meal. Then with a very sharp knife shave off in slices not more than an eighth of an inch thick. Lay them in a hot frying pan and turn as soon as transparent; cook a moment on the other side, tip the spider and let the fat drain away from the bacon. Then serve alone or with eggs, beefsteak, veal cutlets, liver or oysters. The slices may be laid in a fine wire broiler and cooked over a clear hot fire, or the broiler laid in a pan and the whole placed in a hot oven until transparent.

Keep the bacon in a cold place that it may be hard and firm before slicing, and if not ready to fry immediately, put the slices in the refrigerator until wanted.

RECIPE, No. 59. CORN FRITTERS OR CORN OYSTERS

1 c. corn pulp.	$\frac{1}{4}$ tsp. salt.
1 egg.	$\frac{1}{8}$ tsp. pepper.
2 tbsp. flour.	

Remove husks and silk. Run the point of a knife through each row of kernels, or shave off a thin paring merely to open the kernel. With the back of the knife press out the pulp. Add the egg well beaten, flour, and seasoning. Do not add milk unless the corn be so dry that it will not hold together, or if the corn be scanty and it must be made to "go farther."

Use a generous measure of pepper if you wish to bring out an oyster flavor. Cook in hot, salt pork fat, or butter; drop from a tablespoon in small oval shape and turn over when brown. There should be just flour enough to hold the egg and corn together.

RECIPE, No. 60. BAKED SAUSAGES

There is much spattering of fat when sausages are cooked on top of the stove, and it saves work to bake them; if watched they are less likely to be hard and dry. Pour boiling water over them and let them stand five minutes, drain and put on a granite plate and cook in a hot oven, turning over as soon as slightly brown. They should be well cooked but not hard. If you like, as soon as the fat has baked out, have ready some apples, quartered and cored, and pared if the skins are tough, and lay the pieces in the fat and cook till soft.

RECIPE, No. 61. CREAMED DRIED BEEF AND SAUSAGES

Cut four links of sausage into inch pieces, cook them gently in one pint of boiling water for ten minutes. Skim off the fat and stir in one-half pound of dried beef, shaved thin and torn into bits. Wet one and one-half teaspoons of flour in cold water and stir it in, add salt if needed and serve it with baked potatoes, or steamed brown bread.

RECIPE, No. 62. FRIED OR SAUTÉD FISH

Smelts, perch, trout, and other small pan fish may be fried whole. Cod, halibut, and other thick fish should be skinned and boned and cut into slices one inch thick and two or three inches square. Fish for frying should be cleaned thoroughly, dried, and seasoned with salt, then covered with flour, or fine meal, or fine bread crumbs, then dipped in beaten egg, then in crumbs again. Or they may be dipped in flour paste instead of egg, before dipping in the crumbs. Fry in deep, smoking hot fat, or sauté them in a small amount of hot, salt pork fat, from two to five minutes. Drain on paper, and serve with tomato sauce.

LESSON XVII

SHELL-FISH

CHEMICAL COMPOSITION

	WATER	PROTEIN	FAT	CARBO- HYDRATES	ASH
Oysters	88.3	6.0	1.3	3.3	1.3
Clams	80.8	10.6	1.1	5.2	2.1
Lobsters	30.7	5.9	.7	.2	.8

WATER	PROTEIN	FAT	CARBOHYDRATES	ASH
Oysters	Clams	Oysters	Clams	Clams
Clams	Oysters	Clams	Oysters	Oysters
Lobsters	Lobsters	Lobsters	Lobsters	Lobsters

OYSTERS

Oysters are used more extensively and are more highly prized for food than any other shell-fish. They are easily digested when fresh and only slightly cooked, but when over-cooked they are tough and leathery and therefore not digested easily.

They contain so little nutriment, however, in proportion to their cost, that they are an expensive food. They are useful in convalescence on account of their agreeable flavor and also as an appetizer at the beginning of a meal. But they furnish little energy for either brain or muscles. As in the case of all fish care should be taken that the oysters are fresh.

RECIPE, No. 63. RAW OYSTERS

Wash and scrub the shells; open with an oyster opener or blunt edged pick. Cut under the connecting muscle and serve in the hollow shell, in a plate of ice, with lemon or horse-radish.

RECIPE, No. 64. ROAST OYSTERS (IN SHELL)

Scrub the shells thoroughly. Put the oysters into a pan, flat side up, in order that the hollow side may make a cup to retain the juice. Bake or cook under a gas flame until the shells open. Remove the top shell and serve at once.

RECIPE, No. 65. TO PREPARE OYSTERS FOR COOKING

Pour one half cup cold water over one quart of oysters; then with clean hands take out the oysters separately, and remove any bits of shell or sea-weed. Serious accidents have often resulted from the presence of pieces of shell. The oyster liquor is seldom used, as enough comes from the oysters in cooking, but if desired it should be strained before using.

RECIPE, No. 66. TO PARBOIL OYSTERS IN THEIR LIQUOR

Put them in a saucepan without water; stir or shake the pan slightly; as soon as heated, sufficient liquor comes from them to prevent burning. When the edges curl and the oysters look plump instead of flat, they are cooked. It takes but a few minutes, and care must be taken not to over-cook them. When seasoned with salt, pepper, and butter it is called a plain roast; if put on toast, a fancy roast.

RECIPE, No. 67. FRIED OR SAUTÉD OYSTERS

Cover large, prepared oysters with fine cracker crumbs seasoned with salt and pepper. Melt a little butter in a frying-pan. Brown the oysters on each side and serve very hot; or cover with fine bread crumbs, egg and crumbs, and fry in deep, smoking hot fat.

RECIPE, No. 68. STEWED OYSTERS

1 c. milk scalded.

$\frac{1}{4}$ tsp. pepper.

1 pt. oysters.

1 tbsp. butter.

When the milk is scalding hot, put the prepared oysters into another saucepan and heat them until the edges curl;

add the pepper, butter, and salt, if needed, and the hot milk. Serve at once.

RECIPE, No. 69. SCALLOPED OYSTERS

1 pt. oysters.	$\frac{1}{2}$ tsp. salt.
1 c. cracker crumbs.	$\frac{1}{4}$ tsp. pepper.
$\frac{1}{3}$ c. melted butter.	

Prepare the oysters and season them with the salt and pepper. Stir the crumbs in the butter with a fork. Butter a shallow dish, put in one fourth of the crumbs, then one half of the oysters, another one fourth of the crumbs, the remaining oysters, and a thick layer of crumbs on the top. Bake twenty minutes, or until the crumbs are brown and the juice bubbles up on the edges.

In doubling the rule do not double the crackers, for it takes no more for the lower and upper layers, only for the middle layer. Half as many more will be sufficient.

RECIPE, No. 70. OYSTER CHOWDER

1 tbsp. salt pork dice.	1 pt. oysters.
1 minced onion.	1 c. to 1 pt. white sauce.
1 c. hot water.	Oyster crackers.
1 pt. thin sliced raw potatoes.	

Cook the diced pork until crisp, being careful not to burn it; cook the onion in the fat until slightly colored; add the hot water and stir well; then strain this water into the stewpan, and add the sliced potatoes. Cook until soft, about ten minutes. Put in the oysters which have been picked over and freed from the shell; add the strained oyster liquor and the white sauce, and a few oyster crackers. When the oysters are plump, serve.

RECIPE, No. 71. CLAM CHOWDER

$\frac{1}{2}$ pk. clams in shell, or a can of clams.	1 pt. clam liquor.
2 tbsp. salt pork fat.	1 qt. sliced raw potatoes.
1 sliced onion.	$\frac{1}{4}$ tsp. pepper
1 pt. water.	1 pt. thick white sauce.
	6 butter crackers, split.

Wash and scrub the shells; put them into a kettle, add one half cup water and cover tightly. Let them steam until the shells open. Remove the shells, thin membrane, and black end. Cut fine all but the soft part. Cook the onion in the pork fat until slightly colored but not burnt and strain the fat into a stewpan with the water, clam liquor, and potatoes. When potatoes are done, add the pepper, white sauce, clams, and crackers. Add more milk or clam water if desired and serve as soon as hot.

RECIPE, No. 72. STEAMED OR CREAMED CLAMS

When more simple methods are desired, after steaming and opening the clams, heat them in the clam water, and season with butter and pepper, and vinegar if preferred; or serve them in white sauce.

LESSON XVIII

POTATOES

CHEMICAL COMPOSITION

WATER	PROTEIN	FAT	CARBOHY- DRATES	ASH
62.6	1.8	.1	14.7	.8

Potatoes are almost three fourths water. The solid matter consists largely of starch and cellulose, with a small quantity of protein, and mineral matter, — chiefly potash salts, held in solution in the juices. About a quarter of the whole potato is waste material.

New potatoes, unless perfectly ripe, contain but little starch. In late summer and in autumn potatoes are in their best condition but the amount of starch and protein diminishes by keeping, and in spring or when the potatoes begin to sprout, a part of the starch changes to gum and this makes them sticky or waxy; some of the water has evaporated, the cell membranes are dry and hard, and their value as food has diminished. When sprouts appear remove them at once.

The amount of protein in potatoes, though small, is more than that in any other of the moist vegetables. This, together with the fact that they contain valuable mineral matter, are cheap and palatable, combine well with other foods, and are easily cultivated and kept, makes them a favorite vegetable food.

But they have been greatly overrated and should not be eaten alone, or in too great proportion. They contain little tissue forming material; and if they be depended upon mainly for sustenance, so large a bulk of them is required

that the system is overtasked. They should be eaten with fat, fish, or meat to make perfect food.

As they contain starch, they must be cooked to be wholesome, and it is important that little or none of their nutriment be lost in the process.

The most economical methods of cooking potatoes are baking, steaming, and boiling. In the first two methods the potatoes are cooked whole and unpared; and only those of the best quality are suitable for cooking in this way. In boiling potatoes it is now the custom to pare them first, as it saves time when serving the dinner.

Scientists tell us that it is wasteful to pare potatoes before cooking, as most of the protein and mineral matter is in the outside layers, and unless the paring is very thin a large part of the valuable matter is lost.

But until potatoes are all of good quality at all seasons of the year, there will be times when paring is necessary.

Except at exorbitant prices, we cannot buy selected potatoes, but must take them as they come; many of them gashed by the hoe, or bruised in transportation, or green from ripening above the ground. They are subject to disease from wrong soil or climatic conditions, and are frequently hollow or black hearted, yet good on the outside. If cooked in their skins these defects penetrate the whole potato, and at meal time you may have a short allowance. But by dividing the potato and paring you may save the good part and if the whole must be discarded, you are spared the annoyance of cooking it with the good potatoes and losing the labor of paring it.

Potatoes belong to a poisonous family and the skin contains a bitter substance, which is set free by the heat and goes off with the steam, provided the potatoes are opened or uncovered as soon as done. If not, the potato absorbs it and becomes bitter.

Some persons find boiled potatoes difficult to digest, especially when they are cooked in stews and chowders, where the potato water is part of the stew. A better way is to scald sliced potatoes five minutes, and drain them before adding them to the stew.

The skin of new potatoes is very thin and much of it comes off in the scrubbing and the remainder may be scraped off without taking the valuable portion next below. Potatoes that are not to be pared should be sound, above all suspicion; scrub them with a brush to remove all the earthy matter adhering to the skin, using a knife if scraping is needed and to dig out the eyes.

If you remember to put the stewpan with fresh water over the fire first, the water will be boiling and ready for the potatoes as soon as they are scrubbed. They need no soaking, if they are clean. It is only in the spring when potatoes are shrivelled and gummy, that soaking improves them, and then only after they are pared. Soaking supplies the water the potatoes have lost, dissolves the gum and makes them less sticky. Drop all potatoes into water as soon as pared, for they turn brown if exposed to the air; and except when using old potatoes, do not pare them until about ready to use them.

If we examine a slice of potato under the microscope, we can understand why in cooking it should be put into boiling water rather than into cold. The starch is found throughout the potato, enclosed in cells, the walls of which are thin membranes of cellulose. Each cell contains ten or twelve grains surrounded by a watery, albuminous juice. In cooking the potato, this juice becomes boiling hot, the starch grains absorb it, the wall of cellulose is softened and is easily burst by the swollen starch, so that the potato which before cooking was wet and hard is now filled with soft mealy starch.

Were we to cook the potatoes by putting them into cold water, especially if they have been pared, some of the starch, gum, and potash salts will be drawn out and the starch will not begin to cook until the water boils. Hence though the potatoes may look and taste well, no time is gained in cooking and they must have lost some portion of their nutriment.

But if put into freshly boiling water this coagulates the albuminous juices and they are retained in the potato. Potatoes should have plenty of room and boil gently but

steadily to prevent loss of surface by rubbing against one another. Salt should be added when half done, in proportion of one teaspoon to one quart of water.

And lastly, — and most important of all the steps in the process, the potatoes should be taken up the moment they are done, — that is, when a fork or large needle will penetrate them easily. Do not break them by frequent piercing. Drain at once, remove the cover, and shake, to let the water inside which has not been absorbed by the starch pass off as steam. Lay a folded napkin over to keep them hot until ready to serve, which should not be delayed longer than needed to take up the other food.

If we cook them after all the starch is softened the skin will burst and the starch on the outside will absorb the bitter boiling water in the kettle; after a time the potato will break up and partly dissolve and we will have a bitter, pasty gruel instead of a firm but soft and mealy potato.

RECIPE, NO. 73. DIRECTIONS FOR BOILED POTATOES

1 qt. boiling water. 6 large potatoes. 1 tsp. salt.

Do not Pare Potatoes, if new, or sound, or to be served whole, or in salad; or to be warmed over, or if you wish to save substance and flavor. Select of uniform size, scrub, and scrape where needed; do not soak; put in cold place if not ready to cook. Put into boiling, salted water to cover, cook gently twenty minutes if small and thirty minutes if large. Drain quickly, cover with a napkin and keep hot.

Pare Potatoes, if necessary to save time before serving, or if very large and irregular in shape, or of inferior quality, or old and withered. Cover with cold water as soon as pared, but do not soak except when old.

When potatoes are needed quickly, or for potato soup, or fishballs, or to be served as mashed or riced, wash, pare and cut in quarters; if to use in stews, chowders, or scalloped mixtures, cut in slices or small cubes; if for hashed brown, chop into bits. Scald them first for stews, etc.

RECIPE, No. 74. RICED POTATO

Mash the potatoes as soon as they are boiled and drained. Rub them with a wooden masher through a strainer into a hot dish.

RECIPE, No. 75. MASHED POTATO

To one pint of hot boiled potatoes, add one tablespoon of butter, one half teaspoon of salt, a speck of pepper, and enough hot milk to moisten. Mash in the saucepan in which they were boiled ; beat with a fork till light and creamy, and turn out lightly on a hot dish.

RECIPE, No. 76. POTATO CAKES

Make cold mashed potato into small round cakes about one half inch thick. Put them on a baking tin, and brush them over with milk. Bake in a hot oven till golden brown.

Questions on Lessons XVI, XVII, and XVIII

- | | |
|---|---|
| What is the value of oysters as food? | What is their principal value in a diet? |
| Why are they so often served at the beginning of a meal? | Do potatoes require a hot oven? |
| Why is it necessary for them to be absolutely fresh? | What sized potatoes are the best for baking? |
| How do pork products and shell-fish compare in fat? protein? water? | Why should we learn to eat fat? |
| Why do boiled potatoes give us little energy? | What is the principal value of fat in the diet? |

LESSON XIX

EXPERIMENT WITH ALBUMIN IN MEAT

CHEMICAL COMPOSITION OF MEAT

MEAT	WATER	PROTEIN	FAT	ASH
Beef: round	60.7	19.0	12.8	1.0
loin	52.5	16.1	17.5	.9
neck	45.9	14.5	11.9	.7
Mutton: leg	51.2	15.1	14.7	.8
Lamb: breast	45.5	15.4	19.1	.8
leg	52.9	15.9	13.6	.9

WATER	PROTEIN	FAT	ASH
Beef round	Beef round	Breast lamb	Beef round
Lamb leg	{ Loin beef	Turkey	{ Loin beef
Loin beef	{ Turkey	Loin beef	{ Leg lamb
Leg mutton	Leg lamb	Leg mutton	{ Leg mutton
Fowl	Breast lamb	Leg lamb	{ Breast lamb
Neck beef	Leg mutton	Beef round	{ Turkey
Breast lamb	Neck beef	Fowl	Chicken
Chicken	Fowl	Neck beef	Fowl
Turkey	Chicken	Chicken	Neck beef

Myosin or muscle albumin is found in the juices and fibres of lean meat. A piece of lean meat, if put into boiling water, shrivels and contracts, and the juices stay in the meat. The water is unchanged. But these small pieces of meat which were put into cold water at the beginning of the lesson have colored the water red and given it a taste, which shows that the juices have been drawn into the water. Muscle juice consists of water holding in solution protein, salts, and extractives. On heating this water, we find the red color changes to brown, and the water seems thicker. Soon the brown substance becomes harder, separates entirely from

the water, and, when the water stops boiling, settles. Muscle albumin coagulates at 160° Fah.

By this experiment we have learned that cold water draws out albuminous juices and holds them in solution, and that boiling water hardens albumin.

RECIPE, No. 77. BEEF TEA

1 lb. shin of beef.	½ tsp. salt.
1 pt. cold water.	

Scrape the meat very fine and put it into the cold salted water. Let it stand one to two hours. Put it into double boiler and cook thirty minutes. Press it through a strainer. Remove the fat with paper. This is very strong beef tea and may have more water added if liked.

LESSON XX

POULTRY

CHEMICAL COMPOSITION

	WATER	PROTEIN	FAT	ASH
Poultry: chicken . . .	43.7	12.8	1.4	.7
fowl	47.1	13.7	12.3	.7
turkey . . .	42.4	16.1	18.4	.8

WATER	PROTEIN	FAT	ASH
Fowl	Turkey	Turkey	Turkey
Chicken	Fowl	Fowl	{ Chicken
Turkey	Chicken	Chicken	{ Fowl

The flesh of poultry has less red blood and is drier than the flesh of animals. It is not marbled with fat, and as it abounds in phosphates it is valuable food, particularly for invalids. The fibres are not closely connected by tough membranes, and are therefore easily separated and digested.

The best chickens have soft yellow feet, short thick legs, smooth moist skin, plump breast, and the cartilage on the end of the breastbone is soft and pliable.

Pin feathers always indicate a young bird and long hairs an older one. Old fowls have long thin necks and feet, and sharp scales; the end of the breastbone is hard, the flesh has a purplish tinge, and there is usually a large amount of fat.

TO PREPARE A FOWL FOR COOKING

Pick out the pin feathers, remove the hairs by singeing over a blaze, and wipe with a damp cloth. Cut off the head, slip the skin back from the neck and cut the neck off close to the body, leaving skin enough to fold over on the back.

Remove the windpipe, pull the crop away from the skin on the neck and breast and cut it off close to the body.

Never cut the skin on the breast to remove the crop, but take it out from the end of the neck. Cut out the oil bag in the tail. Make an incision near the vent, insert two fingers, loosen the fat from the skin, and separate the membranes lying close to the body. Keep the fingers up close to the breastbone until you can reach in beyond the liver and heart, and loosen on either side down toward the back. This will enable you to avoid breaking the gall bladder which lies on the left side under the liver. When the membranes are all loosened, clasp the fingers round the gizzard and draw everything out. The kidneys and lungs will not come with the others, and must be looked for in the hollows near the backbone and between the ribs. Wipe the chicken inside and outside with a damp cloth.

If the chicken is to be baked or boiled whole fill the skin where the crop was with stuffing, and put some inside the body. Skewer or tie the legs and wings close to the body.

If the chicken is to be broiled split it down the entire length of the backbone, before removing the entrails.

If to be stewed or fricasseed, cut off the legs and wings at the joints. Cut from near the vent through the membrane lying between the end of the breastbone and tail, down to the backbone, on either side. Then remove the entrails. Break off the backbone just below the ribs, cut through the cartilage dividing the ribs, and separate the collar-bone from the breast.

To clean the giblets: Slip off the thin sac round the heart and cut out the veins and arteries. Remove the liver and cut off all that looks green near the gall bladder. Be careful not to break the gall bladder. Trim off the fat and membranes from the gizzard, cut through the thick part, open it, and remove the inner lining without breaking it. Cut off all the white gristle and use only the thick fleshy part. The trimmed gizzard, liver, and heart are all that are used. Wash and soak them in cold water, then stew them until tender.

RECIPE, No. 78. ROAST CHICKEN

Clean and prepare the chicken as directed.

Stuffing. Moisten one cup cracker or soft bread crumbs with one fourth cup melted butter, season with mixed sweet herbs. If moist stuffing is desired add hot water.

Place the chicken on one side on a rack in a dripping-pan. Rub all over with salt, and soft butter, or dripping. Put three tablespoons of chicken fat or beef dripping over it and in the pan. Sprinkle two tablespoons of flour over the pan to brown the dripping. Use no water at first. Put the pan in a very hot oven with the oven rack underneath to keep the fat from burning.

In five minutes check the heat, baste with the fat, and when the flour is brown add a cup of hot water and baste often, adding more hot water as it boils away. Turn the chicken that it may brown uniformly, and baste often that it may not become dry.

Bake a four pound chicken one and one half hours, or until the joints separate easily. Pour off nearly all the fat, thicken the liquid in the pan with flour wet in cold water, cook ten minutes, and strain the gravy before serving.

RECIPE, No. 79. CHICKEN FRICASSEE

Clean the chicken, and at the joints cut into pieces for serving. Cover with boiling water; add two teaspoons salt and one quarter teaspoon of pepper.

Simmer till the meat is tender. Remove the large bones and cook them again in the water. Dredge the meat with flour and brown in hot dripping. Put on toast on a hot dish.

Strain the broth and remove the fat. To one cup chicken broth add one cup milk and thicken with four tablespoons flour cooked in two tablespoons butter, as directed for white sauce. Add more salt and pepper if needed, and one fourth teaspoon celery salt and one teaspoon lemon juice.

If a white fricassee is desired omit the browning.

RECIPE, No. 80. CRANBERRIES

1 q. cranberries.

1 c. cold water.

2 c. sugar.

Pick over and wash the cranberries, put them in a granite saucepan, sprinkle the sugar on top, pour on the water, and after they begin to boil cook for ten minutes, closely covered. Do not stir them. Push them down with a wooden spoon if they are inclined to boil over. The berries will be tender, will jelly when cold, and are much nicer than when sifted.

RECIPE, No. 81. BRAISED RABBIT OR SQUIRREL

Skin and clean a young squirrel or rabbit. Cut into pieces for frying; rub each piece with salt and pepper, and dust with a trifle of mace; dredge well with flour and sauté to a rich brown in half butter and half lard. Remove the meat from the pan, add three tablespoons of flour, and stir until it is brown. Add enough soup stock or hot water to make a gravy as thick as cream. Place the meat in a porcelain-lined pot, or earthenware "cooking-crock," or casserole, pour over it the gravy and a cup of tomatoes, which have been well stewed down and seasoned with salt, pepper and a grated onion. Cover tightly, stand it on a muffin ring in a moderate oven, and let it cook for three hours. Serve in the dish.

LESSON XXI

FIRST LESSON IN DOUGH

Wheat, rye, corn, buckwheat, and some other grains are ground coarse, and called meal; or fine, and called flour; and in these coarse or fine forms they are used in a variety of ways, but always with water or some other liquid.

These mixtures of moistened meal or flour are called doughs if the mass is only slightly moistened, and batters if enough liquid is used to make a mixture that will pour, or that can be beaten. Dough is from a word meaning "to wet or moisten"; and batter is from one meaning "to beat."

Other ingredients are added to change and improve the texture and flavor, and then these mixtures are cooked in a variety of ways, — boiling, steaming, baking, and frying. They are classed under the general names of breads, cakes, pastry, and puddings, and in one form or another are probably used in every family at every meal.

When properly combined and prepared, they afford cheap, wholesome, and palatable forms of food.

Flour or meal, if merely wet, and then heated or cooked, will be dry, tough, and compact, and when eaten it will be difficult for the digestive fluids to penetrate the mass. To be digested easily, doughs and batters must be light and porous and there are various ways of making them so. One of these ways is illustrated in the recipe for suet pudding made by the use of baking-powder.

Baking-powder is a mixture of an acid salt (cream of tartar) and a carbonate of an alkali (soda), — substances which do not act upon each other when dry. Put a teaspoon of baking powder into two tablespoons of water and see what

happens. A chemical reaction takes place, by which carbon dioxide gas is liberated. This gas, as it tries to escape, fills the liquid, and causes effervescence. The gas soon disappears and the liquid is still, and is neither acid nor alkaline, because the soda and cream of tartar have neutralized each other. But if there had been too much soda in the baking-powder the liquid would have had an alkaline taste, and if too much acid, an acid taste.

On account of the difficulty of measuring these two substances in the correct proportion, manufacturers have mixed them by weight and called them baking-powders. It is safer to use soda and cream of tartar in the form of baking-powder.

In making this pudding, if baking-powder be put into the flour and mixed thoroughly, so that every particle of flour will have its share of the powder, when the flour is wet and made into dough, carbon dioxide gas will be liberated and try to escape, as it did from the water; but on account of the sticky and elastic nature of the gluten in the wheat flour, the gas cannot escape so readily, but will stretch and expand the dough and make it full of bubbles or cells. Then, if the dough be cooked quickly, before the gas escapes, the starch grains will be ruptured by the combined effect of heat and moisture, the glutinous walls of the cells will be hardened, and we shall have a light, porous loaf of pudding. Loaf is from the word *hlifian*, "to raise, to lift up." This recipe also shows us how dough may be made more tender by the use of fat or shortening. Suet is one form of beef fat. It is used in doughs or flour mixtures to make them tender and is a wholesome and economical form of fat, and particularly suitable for a winter diet. By adding different flavoring ingredients, such as ginger, molasses, nutmeg, or fruit, a variety of puddings may be made from one formula.

RECIPE, No. 82. PLAIN SUET PUDDING

1 pt. flour.	$\frac{1}{4}$ cup beef suet.
2 tsp. baking powder.	Cold water to make a soft
$\frac{1}{4}$ tsp. salt.	dough.

Mix the flour, baking-powder, and salt; add the chopped suet and mix it well. Add the cold water gradually to form a soft dough. Grease a mould or several cups, fill to within an inch of the top, and cover with greased paper. Put the cups into a kettle of boiling water, enough to come half way up the mould. Cover the kettle and steam two hours if in a mould, and one hour if in cups. Serve on a hot platter, and eat with hot gravy or a sweet sauce.

RECIPE, No. 83. FRUIT SUET PUDDING

Make the same as for plain suet pudding, adding to the dry ingredients:

$\frac{1}{4}$ c. currants.	$\frac{1}{4}$ c. sugar.
$\frac{1}{4}$ c. raisins.	spk. nutmeg.
2 sq. in. citron, sliced.	

Boil two to three hours.

RECIPE, No. 84. STEAMED BROWN BREAD

1 c. corn meal.	$\frac{1}{2}$ tsp. soda.
1 c. rye meal.	$\frac{1}{4}$ c. molasses.
$\frac{1}{2}$ c. wheat flour.	$1\frac{1}{2}$ c. sweet milk.
$\frac{1}{2}$ tsp. salt.	

Mix meal, flour, and salt. Mash the soda, sift it into the meal, and mix thoroughly. Add the molasses and milk, then beat well and turn into a greased mould, cover and steam two and one half hours. Or use small cups, cover with greased paper, and steam one hour.

RECIPE, No. 85. CHRISTMAS PUDDING

Mix two and one half cups flour, one teaspoon soda, one teaspoon each salt, cinnamon, mace and allspice, and two teaspoons baking-powder. Have one cup raisins, one fourth cup each citron and figs, and one half cup pecans cut fine and floured slightly. Stir into the flour mixture one cup milk, one cup molasses, and two thirds cup softened butter; add fruit and turn into buttered moulds. Steam three hours.

TO CHOP SUET

Cut into small pieces, remove the membranes, shave each piece in thin slices, and chop on a board. Or, if a large quantity is to be prepared, sprinkle the pieces with flour, and chop them in a tray in a cold room. This will prevent the suet from becoming soft and sticky.

TO CLEAN DRIED CURRANTS

Put them in a squash strainer, and sprinkle thickly with flour. Rub them well until they are separated, and the flour, grit, and fine stems have passed through the strainer. Then place the strainer and currants in a pan of water and wash thoroughly. Lift the strainer and currants together, and change the water and wash again until the water is clear. Drain between towels, then pick over carefully and dry them in a sunny place or between towels, but do not harden them by putting them into the oven.

TO STONE RAISINS

Pour boiling water over them, a few at a time. When cool enough to handle, drain and rub each raisin between the thumb and finger till the seeds' come out clean, then cut or tear apart, or chop, if wanted very fine.

RECIPE, No. 86. MAIZE PUDDING

1½ c. corn meal.	½ tsp. allspice.
½ c. flour.	1 c. sweet milk.
½ tsp. salt.	½ c. P. R. molasses.
1 tsp. soda.	1 c. sour milk.
2 tsp. ginger.	1½ c. stoned raisins.

Turn into a buttered pudding-mould, place the mould in boiling water, and boil two hours.

RECIPE, No. 87. FRUIT-SYRUP SAUCE

1 c. fruit-syrup.	1 tsp. corn-starch.
½ c. sugar.	1 tsp. butter.

Use the syrup from apricots, peaches, cherries, quinces, or any fruit you prefer. The amount of sugar will depend upon the acidity of the fruit. Mix the corn-starch with the sugar, add the syrup, and boil all together five minutes. Add butter last.

RECIPE, No. 88. CREAMY AND HARD SAUCE

Cream one fourth cup of butter, add slowly one half to one cup powdered sugar, beat in gradually two tablespoons rich fruit syrup, or any fresh fruit juice, and two to four tablespoons thick cream (whipped or not, as you have time). Serve hot by standing bowl over boiling water just before serving, and stirring only till melted and creamy. Or, serve cold; or, if for *hard sauce*, omit cream and pack it into a dish for serving and chill till firm.

Questions on Lessons XIX, XX, and XXI

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|--|---|
| What meat would you buy to secure the most protein? | Why do we cook grains, whether whole or ground, in water? |
| How does the flesh of poultry differ from that of animals? | What is dough? |
| What parts of a fowl are not used as food? | What is a batter? |
| What two ways of cooking grains have we learned about? | In what forms are flour and meal cooked? |
| What are the grains called when ground? | What is the easiest way to make dough light? |
| Are there any other kinds of flour besides that made from wheat? | What is baking-powder? |
| | What is suet? |
| | How do you prepare raisins, currants, and suet for cooking? |

LESSON XXII

HOW TO PLAN AND PREPARE A BREAKFAST

For a breakfast, adapted to a small family, of moderate means, in good physical condition, sedentary occupation, and suited for a cool morning.

Menu: Coffee, oatmeal, toast, bacon, and hot apple sauce.

We have in the coffee, cereal and apple sauce, a small proportion of the water needed; a larger part having been taken fresh on arising. We have starch in the toast and cereal, sugar in the coffee and fruit and possibly on the cereal, although many people dislike sugar in the morning, and for such there is enough heat giving food in the fat of the cream, fat bacon, and butter. There is but little protein, but the gluten in the toast and oatmeal will be sufficient, for this menu is planned with reference to the other meals of the day, which will contain more. In the bacon we have some mineral matter, and the appetizing flavor of the crisp tissue. This appetizer is augmented by the dextrine on the toast and the acid of the apple, for no matter how good our appetite we need variety and something to help develop flavors.

After planning the meal, the first thing to be considered is the order of work in its preparation; for with other meals to prepare and the daily work to do, time in the morning is an important factor. How to make every step and every dish count for its utmost and have every dish ready at the time for serving requires no little thought and experience. We have learned how to prepare all the dishes in the menu and the work should be done in the following order. These directions apply also to the preparation of the home break-

fast. The cereal requires the longest time, the bacon the least.

If in entering the kitchen you pass the sink in going to the range, turn on the faucet, let the water run while you take the boiler apart and lift the measure cup from its hook; put the needed amount of water into each part and take them to the range; light two burners if a gas range is used, and put the top boiler over the nearer burner; in the few minutes before the water boils bring the bacon from the refrigerator, and the bread and the apples to the table; slice the bread and bacon, returning the remainder to their respective places. Wipe the cup, measure the meal and salt, and stir them into the rapidly boiling water, and after stirring till thick, set the boilers together and adjust the flame. This will need no further attention. Put the coffee pot, with the needed amount of cold water, over the front burner, everything needed for this being found on the table or shelf. While the water is coming slowly to the boiling point, lay the breakfast table, which requires but a few minutes if you follow the sensible method of order and handiness. Next, quarter, core, and pare the apples, just enough for one meal; rinse and turn them into a stewpan from the shelf; add cold water barely to cover the bottom of the pan, cover closely and set them on the range. The water by this time has boiled a few minutes, add the coffee and egg shell, and after boiling five minutes set back over the simmerer, and the apples tightly covered, over the front burner.

For two or three minutes it will need no attention, and you may light the toasting burner, put the pan for the bacon on the range, and while you are watching and turning toast, your eyes and ears are on the alert for the first indication that the apple water has boiled out. You will know because no steam escapes and there is no sound of bubbling; but be sure, before your sense of smell catches any hint of scorching, to lift the cover quickly, and if the apple is soft, add sugar and butter or salt, stir and beat quickly, and turn out at once. Meanwhile keep your eyes on the toast and remove to a hot plate as soon as done. Then cook the bacon.

Follow this general method in preparing other meals. Foods that require the longest time for cooking, or that are to be served cold, should be prepared first. For persons who exercise freely out of doors, add to the menu a dish of warmed over meat or fish; use muffins instead of toast.

RECIPE, No. 89. BAKED APPLES

1 tsp. sugar.

1 tbsp. water, to each apple.

Wipe the apples, remove the core, and put them in a granite or earthen dish. Put the sugar in the center of each apple and the water in the dish. Bake in a hot oven from twenty to thirty minutes, or until soft, but not until broken. Baste twice with the syrup.

Vary the method in this way. After coring, cut the apples in halves and make the core cavity deeper; put them in the pan hollow side up; heap the cavity with sugar and a bit of grated lemon rind, and add water to half this height. The halved fruit makes a cup which holds the syrup, allowing it to permeate the apple.

RECIPE, No. 90. FRESH APPLE SAUCE

This is one of the acceptable dishes for breakfast. Do not attempt to make a large quantity, for it is never better than when fresh.

Wipe the apples and divide into quarters, or eighths if large, and in this way save yourself the trouble of not paring any but sound portions. Be careful to pick out every particle of the hulls in the seed cavities. As you pare toss them into the kettle, which should be clean, white or porcelain lined. A quart will make sufficient for six persons. Add water to just show among the pieces, cover with a granite cover that fits tightly to keep in the steam, and let them cook rapidly until soft. The time will depend upon the apple; some varieties soften in ten minutes while others will take double that time. After once making it you can judge better than by following any arbitrary rule. Do not uncover them more than necessary. When they are all puffing above

the water and are soft when tried with a silver fork, add sugar to taste (half a cup is sufficient unless the apples are very tart) and remove at once, stirring as the sugar melts, and this will beat the apple to a smooth mass. If they are tough and knurly there will be hard places in the sauce, but a fair mellow apple will cook uniformly. If eaten hot for breakfast a little butter is an addition.

RECIPE, No. 91. BAKED BANANAS

Peel, halve them each way, allow one teaspoon sugar, one teaspoon lemon juice and half teaspoon butter for each banana; put them in earthen baking dish; nearly cover with hot water and bake about twenty minutes.

RECIPE, No. 92. BAKED QUINCES

Wipe, core, fill cavities with sugar, half cover with hot water, bake till soft, baste with the syrup. Serve quinces hot and dot with butter.

RECIPE, No. 93. HARD PEARS, SWEET APPLES

Wipe, steam till nearly tender, add sugar to the water, turn both into pan, and bake till soft.

LESSON XXIII

VEGETABLES

CHEMICAL COMPOSITION

VEGETABLES	WATER	PROTEIN	FAT	CARBO- HYDRATES	ASH
Tomatoes	94.3	0.9	0.4	3.9	0.5
Spinach	92.3	2.1	.3	3.2	2.1
Celery	75.6	.9	.1	7.7	.9
Squash	44.2	.7	.2	4.5	.4
Potatoes	62.6	1.8	.1	14.7	.8
Cabbage	77.7	1.4	.2	4.8	.9
Peas, shelled	74.6	7.0	.5	16.9	1.0
Lima Beans	68.5	7.1	.7	22.0	1.7
String Beans	83.0	2.1	.3	6.9	.7

WATER	PROTEIN	FAT	CARBOHYDRATES	ASH
Tomatoes	Lima Beans	Lima Beans	Lima Beans	Spinach
Spinach	Peas	Peas	Peas	Lima Beans
String Beans	{ String Beans	Tomatoes	Potatoes	Peas
Cabbage	{ Spinach	{ Spinach	Celery	{ Cabbage
Celery	Potatoes	{ String Beans	String Beans	{ Celery
Peas	Cabbage	{ Cabbage	Cabbage	Potatoes
Lima Beans	{ Celery	{ Squash	Squash	String Beans
Potatoes	Tomatoes	{ Potatoes	Tomatoes	Tomatoes
Squash	Squash	{ Celery	Spinach	Squash

TIME-TABLE FOR BOILING VEGETABLES

Green corn	5 to 10 m.
Rice, peas, tomatoes, asparagus	15 to 20 m.
Potatoes, macaroni, squash, celery, spinach, cabbage	20 to 30 m.
Young beets, carrots, turnips, onions, parsnips, cauliflower	30 to 45 m.
String beans, shelled beans, oyster plant	45 to 60 m.
Winter vegetables, oatmeal, hominy, and wheat	1 to 2 hrs.

Seasoning. One pint of vegetables, mashed or sliced, or one pint of small whole vegetables, requires two tablespoons butter, one teaspoon salt, one eighth teaspoon pepper. Squash, peas, and beans are improved by one teaspoon sugar. Milk, thin cream, or the vegetable liquid may be used to moisten such as are too dry.

RECIPE, No. 94. STEWED TOMATOES

Empty a quart can of tomatoes into a granite pan having a broad surface, and put them over the fire. Add a two inch bit of a salt codfish and let them simmer until tender and well broken up. Mash and cut it frequently with a wooden spoon. When done add one or two tablespoons of sugar according to the acidity of the tomato, and two tablespoons of butter and a few slivers of canned red pepper, or lacking this use a dash of cayenne. Remove the bit of fish and add salt if needed and serve as a vegetable. The fish gives a new flavor and is very appetizing. Some prefer to sweeten the tomato with a bit of soda instead of sugar, but this is a matter of taste. Be sure that it cooks long enough, so there are no thick pieces of tomato floating round in a thin liquid. Yet it should not be too dry.

LESSON XXIV

VEGETABLES

Under the name of vegetables we include one or more parts of a great variety of annual plants cultivated for food.

Roots: beets, carrots, sweet potatoes, radishes, parsnips, turnips, and salsify.

Tubers: potatoes, Jerusalem artichokes, tapioca.

Bulbs: onions, garlic.

Stalks: asparagus, celery, leeks.

Flowers: cauliflower, globe artichokes.

Leaves: beet greens, cabbage, dandelion, lettuce, spinach, etc.

Fruit: classed as vegetable fruit, cucumbers, egg plant, squash, tomatoes, sweet peppers.

Seed vessels: string beans, okra.

Seeds: beans, corn, peas, lentils.

Vegetables contain all the food stuffs, but in varying proportion.

Seeds are rich in protein, and are a good substitute for meat.

Roots and tubers are rich in starch and sugar, help to make variety and give us more bulk than we have in the starchy cereals.

Stalks, leaves, stems and fruit are rich in cellulose and water and are especially valuable in supplying the mineral matter which is less abundant in other common food materials; their cellulose provides the bulk desirable for normal digestion and their great variety makes the diet more attractive. In summer they are refreshing after the heavy food of winter and being easily prepared, many of them needing

no cooking, they lessen the labor of getting a meal. But they cannot take the place of protein.

Although improved transportation gives us fresh vegetables all the year, many vegetables are best when they are in season, — that is at the time when they ripen in the locality where they are to be used. Unseasonable products always command high prices, far beyond their real food value. Each season has a large variety of vegetables, which by cooking and serving in different ways will supply all that are needed for that time.

A good brand of canned vegetables is better than those that are unseasonable, for the latter are not only expensive but frequently not well ripened and never strictly fresh.

Selection. Select vegetables of uniform size, medium rather than large; sound, firm texture; smooth surface, free from green spots or brown blight, and but few bruised leaves; pods crisp and easily snapped, or fresh, well-filled with tender seeds; leaves and stalks crisp, tender, and juicy.

Keeping Vegetables. Unless you have a cold, dry, dark cellar above the freezing point, do not buy winter vegetables in large quantities. In a suitable place root vegetables will keep in bins, and sometimes for a long time if packed in clean dry sand. Squashes need a dry high shelf, slightly warm, and should be spread apart. The stem should always be left on squash or pumpkins.

Green vegetables are best if cooked the day they are gathered. When this is impossible, keep them in a dry cool place. Do not expose their inner texture to the air by removing nature's coverings. Even peas and corn which lose much in flavor by long-keeping, will keep better in their skins than if they are cooked and re-heated. Some housekeepers will not agree with this conclusion; but it is not impossible that peas in the pod and corn unhusked may for a short time, although separated from the mother plant, draw moisture from the yet unwilted pod or husk.

Summer vegetables when fresh do not require soaking in cold water, and it is better not to prepare them until you are ready to cook them.

But if they come from city markets and are wilted, soak-

ing will freshen them; if they must be prepared long before cooking, cover them with cold water to prevent discoloring or wilting; or scald them five minutes, cool quickly, and finish the cooking later.

Cooking Vegetables. A simple way of cooking that softens the cellulose, breaks up the starch grains, develops the flavor and retains the potash salts, is the best for vegetables. Use a covered stewpan and water freshly drawn, and use as soon as it boils. Do not use water from the teakettle.

Cook vegetables gently but steadily until done, tender but not sodden. The time will depend upon the age, size, and freshness of the vegetable. When nearly done, add salt, one level tablespoon to one quart of water, if water is not to be used, one teaspoon for small vegetables cooked in a little water, and use none with sweet corn.

Vegetables which may be cooked in the same general way are grouped under one recipe, with specific directions for selection and preparatory work.

Seasoning. As vegetables have no fat, they need butter or cream, and a little salt to bring out flavor,—more can be added by those who wish it; use pepper sparingly; such as have a large amount of cellulose like greens, cabbage and beets need acid (vinegar or lemon) to soften the fibre; peas, beans, and squash are improved by a bit of sugar to restore that which nature gave them; diced turnips, carrots, and onions may have white sauce, but not too often; leeks, asparagus, stewed celery, and stewed cucumbers are served on toast generously buttered which absorbs the excess of moisture and should be eaten.

One starchy vegetable like potatoes (or rice or macaroni, good substitutes when potatoes are poor) should form a part of one and often two meals each day. For dinner add one cooked, succulent vegetable like the fresh green vegetables of summer, and one uncooked vegetable, eaten as a salad, though not necessarily as a separate course. By varying the vegetable each day, instead of serving a great variety at each dinner, you need not repeat for a week and each day will bring fresh enjoyment of the mid-day meal.

Plan to cook only enough for one meal, for cooked vegetables sour quickly even if unseasoned, and but few varieties are improved by warming over. Left-over portions should be used as a salad, or in some hot combination not later than the next day.

RECIPE, No. 95. CABBAGE, CAULIFLOWER, AND BRUSSELS
SPROUTS

Avoid those with decayed leaves, brown blight, and insect holes. Remove outer leaves and stalks; cut cabbage into quarters and remove core; break cauliflower into flowerets; soak in cold salted water to remove insects. Cook in boiling water, enough to cover; add one fourth teaspoon of soda, boil rapidly uncovered, — sprouts about fifteen, cauliflower twenty, and cabbage thirty minutes. If each leaf is immersed separately fifteen minutes will suffice. If covered while boiling the steam condenses on the cover holding the odor within and the water grows stronger as boiling continues and the odor escapes as the steam lifts up the cover. But if cooked uncovered the odor passes off at once with the steam and is soon dissipated in the air, and the water is much less strongly flavored. Season with salt, butter, and lemon or vinegar.

RECIPE, No. 96. RED CABBAGE, ONIONS, SUMMER CARROTS

Red Cabbage, trim and shred;

Onions, trim, peel and slice;

Summer Carrots, scrape, divide lengthwise in quarters, then across in thin slices.

Cook as directed for string beans; omit nutmeg, and use minced onion with the cabbage; add one teaspoon vinegar five minutes before serving. To the carrots add one teaspoon sugar and one tablespoon lemon juice, and to the onions two tablespoons milk or cream before serving. Keep them hot in the pan till needed.

RECIPE, No. 97. STRING BEANS

Fresh, crisp, yellow or green beans. If wilted, soak half an hour in cold water, drain and dry. Snap off the ends, and shave off the strings if pulling does not remove them. Cut diagonally across the pod in narrow slivers and cover with cold water. Into a stew pan with tight cover put one tablespoon butter, one fourth teaspoon salt, one eighth teaspoon nutmeg and same of pepper, for each pint of beans. Set pan over very low heat, mix as butter melts; lift beans from the water into the pan, drain a bit and the water that clings to them will be sufficient. Cover tightly and cook very slowly about an hour, or until tender. Their own juices, with just heat enough to make steam, will cook them. But lift the cover occasionally, or listen and if they sizzle or are dry, add two or three tablespoons of water. When done remove the cover and boil down nearly dry; turn out and serve with no further seasoning.

Questions on Lessons XXII, XXIII, and XXIV

What is boiling?

What is the temperature of boiling water?

Why does boiled water taste flat?

Prepare a suitable menu for dinner and supper.

What effect has boiling upon potatoes? cabbages?

How many classes of vegetables are there?

LESSON XXV

VEGETABLE SOUPS

Soups are made from the water in which some vegetables have been boiled and thickened with the pulp of the vegetables, mashed fine and sifted. Milk or cream is added to improve the flavor and make them more nutritious. The liquid and vegetable pulp should be blended with a little flour, or other starchy thickening, to keep them from separating. Celery, tomatoes, green peas, green corn, carrots, and parsnips may be used for soup in the same general way as the potatoes. They are valuable foods, enabling one to utilize the water and mineral salts in the vegetable.

Such soups are named from the vegetable used.

GENERAL DIRECTIONS FOR VEGETABLE SOUPS MADE WITHOUT STOCK

Prepare the vegetable; cook potatoes, cauliflower or artichokes in boiling water and discard water; cook others in cold water, let it cook nearly all out; mash, press through sieve, add white sauce (one cup to each pint of pulp and water for most fresh green vegetables, also for canned vegetables; and one pint of sauce for each pint of pulp from spinach, tomatoes and other succulent vegetables). Season with salt and pepper; dilute with hot milk if too thick; add beaten egg, or more pulp if too thin. Serve with toasted crackers.

RECIPE, No. 98. WHITE SAUCE FOR SOUPS

Melt two tablespoons butter in a saucepan; cook it in two tablespoons flour. Add gradually one cup hot milk

or cream. Season with one half teaspoon salt and one fourth teaspoon white pepper.

In making a white sauce, be careful to cook the flour in the hot butter, without browning them; but cook and stir until the mixture becomes slightly thinner. The high temperature of the butter changes the flour into dextrine, which, being soluble, may be diluted with the hot liquid and yet remain smooth. Add the liquid hot, that it may boil quickly and cause the cell walls to burst and the starch grains to swell; and add gradually that the sauce may be stirred, while it is like a thick paste, until it is smooth. If all the liquid be poured on at once, or the mixture be not stirred thoroughly while it is thick, the sauce will be lumpy. Enough liquid must be used to swell all the flour, and make the sauce of the desired consistency. The usual proportion is one tablespoon of fat and two tablespoons of flour to one cup of liquid; and by varying these proportions, and using different liquids and seasonings, a great variety of gravies and sauces may be made with this general rule as the foundation.

Cooking the flour in the hot butter or fat cooks it thoroughly; for the fat, when it stops bubbling, is much hotter than boiling water. When done in this way the flour never has a raw, uncooked taste, and the butter or fat is absorbed by the flour instead of floating on the surface of the sauce.

RECIPE, No. 99. POTATO SOUP

3 potatoes.	1 tsp. salt.
1 pt. of milk or half milk and half water.	1 spk. white pepper.
1 tsp. chopped onion.	$\frac{1}{2}$ tbsp. flour.
	$\frac{1}{2}$ tbsp. dripping.

Wash and pare the potatoes, put them into boiling water and cook till very soft. Cook the onion in the milk in a double boiler. When the potatoes are done, drain and mash them. Add the boiling milk and the seasoning. Rub them through a strainer, and put them back into the double boiler to boil again. Melt the dripping in a small pan, add the flour, and stir till it thickens. Stir it into the boiling soup. Let it boil five minutes. Add one teaspoon finely

chopped parsley, and serve very hot, with croûtons. If the soup be too thick add a little more hot milk or water.

RECIPE, No. 100. BAKED BEAN SOUP

Take cold baked beans, add twice the quantity of cold water, and let them simmer until soft. When nearly done add half as much tomato. Rub them through a purée strainer. Add more water till the right consistency, season to taste with salt, pepper, and mustard. Heat again and serve with toasted crackers or fried dice of bread.

RECIPE, No. 101. CREAM OF CHESTNUTS

1 pt. chestnuts.	$\frac{1}{2}$ tsp. salt.
1 pt. milk or white stock.	$\frac{1}{8}$ tsp. pepper.
1 c. cream.	1 egg.

Remove the shells from the chestnuts, then cover with boiling water, let them stand five minutes; drain, and cover again with boiling water, and blanch them by removing the thin, brown skin. Cook them in boiling salted water to cover, until very soft. Mash them with a wooden potato masher, in the water left in the pan, and rub them through a fine strainer into the milk or stock and cream.

Heat again and let it simmer ten minutes, add salt and pepper to taste, add a little sugar if you desire. Remove from the fire and stir in the beaten egg quickly and serve at once. If the soup be too thick add more hot milk, and if too thin, before adding the egg let it reduce by longer simmering. Serve with toasted or fried croûtons.

RECIPE, No. 102. CROÛTONS

Cut stale bread in half-inch slices. Remove the crusts and cut into half-inch cubes. Put them on a shallow pan and bake until brown. Use them in the place of toast, or as a garnish, or in soups and stews.

RECIPE, No. 103. CANNED CORN SOUP

Empty the corn from a can and turn over it one quart of milk. Stir it well; then turn into a colander to drain. Put the milk on to boil in the double boiler and turn the drained corn, which should be as dry as possible, into a pan in which you have melted two tablespoons of butter. Let the corn cook in the butter, stirring it frequently until it is dry and browned slightly; season it highly with salt and pepper, and if it forms a glaze on the pan scrape it off and let as much of it glaze as will. This will give something of the roasted corn flavor. When well cooked turn it into the milk, taking all the browned part, and let it simmer until the milk is well flavored with the corn. Turn again into a strainer and press as much of the corn through as will go; re-heat; add more salt and pepper if needed; stir in one cup of white sauce.

RECIPE, No. 104. TOMATO CREAM SOUP

1 pt. stewed tomatoes.	1 qt. milk.
$\frac{1}{2}$ tsp. soda.	$\frac{1}{2}$ c. butter.
1 tsp. salt.	1 tbsp. corn-starch.
$\frac{1}{4}$ tsp. white pepper.	6 crisped crackers.

Stew the tomatoes, add the soda, salt, and pepper, and rub through a strainer. Boil the milk in a large double boiler. Cook the corn-starch in one tablespoon of the butter in a small saucepan; add gradually about one cup of the hot milk. Stir it carefully into the boiling milk and cook ten minutes. Cut the remainder of the butter into small pieces and stir into the milk. Add the tomatoes, and when hot and well mixed strain into the hot tureen.

RECIPE, No. 105. BROWNEO CRACKERS

$\frac{1}{2}$ tsp. butter to each whole cracker.

Split round crackers in halves, spread the inside with a thin layer of butter. Put them, buttered side up, into a pan and brown in a hot oven. Serve plain or with soups and oyster stews.

LESSON XXVI

MACARONI

Macaroni is a nutritious and economical food and should be used more freely than it is. Much of the dislike for it arises from ignorance as to the proper mode of cooking. It is made from the choicest varieties of wheat, — a grain which contains all the substances needed for food, though not in the proper proportion. Wheat lacks water and fat. Macaroni, being only wheat flour and water made into a hard, dry paste, is not palatable unless cooked, till tender, in plenty of water or other liquid, and seasoned well or combined with other foods, particularly some form of fat, as butter, milk, cheese, eggs, or meat broth.

Macaroni is prepared in a variety of forms, — spaghetti, Italian paste of fanciful shapes, vermicelli, and round, tubular, and flat macaroni. The paste, while soft, is rolled into sheets, and cut with fancy cutters, or it is forced through metallic plates which have perforations, sometimes in the form of small rings with the center of the hole filled. It is then dried thoroughly and will keep in a dry place a long time.

Macaroni, as often served, is hard and dry, or moist and tasteless. On account of the uneven surface which the macaroni assumes in the serving dish and which hardens on the edges when in the hot oven, a sauce, either white or tomato, should be poured over it to fill the spaces. Then cover with buttered crumbs which in baking will make a crisp brown crust.

RECIPE, No. 106. MACARONI

One half cup macaroni, measured after breaking into inch pieces. Cook in boiling salted water twenty minutes,

or until tender. Drain, pour cold water through it, and serve plain, with hot white sauce or tomato sauce, or use it with meat, in scalloped meat.

Or cover it with sauce, grated cheese, and buttered crumbs and bake until the crumbs are brown.

RECIPE, No. 107. SAVORY MACARONI

Have ready a stewpan half full of rapidly boiling water, add one tablespoon of salt, one fourth teaspoon of mixed whole spice, and two slices of onion.

Let it boil ten minutes, then remove the spice and onion, and add one cup of macaroni broken into inch bits. Let it cook until tender, then drain off the water, and add one fourth cup of butter, one cup of grated Parmesan cheese, and a dash of paprika. Pour over it one half cup of chicken stock and two tablespoons of thick cream, and after they have cooked five minutes turn out into a hot dish.

LESSON XXVII

DRIED PEAS AND BEANS

The seeds of leguminous plants, such as peas and beans, contain a large proportion of protein in the form of vegetable casein. They are deficient in fat, but rich in mineral matter, and are used in the green, unripe state as a fresh vegetable, as shown in another lesson.

The dried varieties of peas and beans are less digestible than the green on account of the cellulose in the hulls, and need long, slow cooking in water to render them suitable for food.

Dried Beans are used in soups and bean porridge, and baked with pork. To make them more easily digested, put a small amount of bicarbonate of soda into the water in which they are parboiled; then rinse and cook them in fresh water.

Dried Peas are used for soups or purées; the split peas are better than the whole, for the hull being removed they are more easily cooked and are more digestible.

RECIPE, No. 108. SPLIT-PEA SOUP

$\frac{1}{2}$ c. dried split peas.	$\frac{1}{2}$ tsp. sugar.
3 c. cold water.	$\frac{1}{2}$ tsp. salt.
1 tbsp. butter.	$\frac{1}{2}$ tsp. white pepper.
1 tbsp. flour.	Milk to thin it.

Pick over and wash the peas. Put them with the cold water on the back of the stove. Let them heat slowly, then simmer two hours or until soft. Rub them through a fine strainer, and put on to boil again. Add milk or water to make it like a thick soup. Cook the flour in the hot

butter and add it to the strained soup when boiling. Add the seasoning, and serve with croûtons or crisped crackers.

A small slice of onion or one fourth of a sweet green pepper may be boiled with the peas.

RECIPE, No. 109. BAKED BEANS

1 qt. pea beans.

1 tsp. mustard.

$\frac{1}{2}$ lb. salt pork, fat and lean.

$\frac{1}{8}$ c. molasses.

1 tsp. salt.

Pick over; wash and soak the beans in cold water over night. In the morning put them into fresh cold water, and simmer till soft enough to pierce with a pin, being careful not to let them cook enough to break. When soft, stir in one fourth teaspoon bicarbonate of soda, turn them into a colander, and pour cold water through them. Place them with the onion in a bean-pot. Pour boiling water over the pork; scrape the rind till white; cut through the rind down one inch in half-inch strips; bury the pork in the beans, leaving only the rind exposed. Mix the salt — use more if the pork is not very salt — and mustard with the molasses. Fill the cup with hot water, and when well mixed pour it over the beans; add enough more water to cover them. After two hours let the water cook nearly out; this gives the fine flavor of browning of the fat. Add more water and again let it cook nearly out. The last hour, lift the pork to the surface and let it crisp, adding water frequently that it may cook down slightly below the beans when they are done. Bake eight hours in a moderate oven. Use more salt and one third cup butter if you dislike pork, or use one pound fat and lean corned beef. If liked richer, use one pound pork and put three slices in near the bottom.

LESSON XXVIII

AFTERNOON TEA

A lesson in serving an afternoon tea may be given in the classroom if convenient. The menu should be simple as it is not intended to be a full meal. Sandwiches of thin bread and butter, plain or with some delicate filling, sweet wafers, or small cakes, and tea or chocolate are sufficient.

RECIPE, No. 110. TEA

Use water freshly boiled. Scald the teapot (earthen, granite, or china); for mild infusions allow one half teaspoon level for each cup; if strong tea is desired allow one teaspoon. Put the tea in the hot teapot and pour boiling water on the tea; cover closely, and let it stand and infuse, not boil, for five minutes. If you have a table teakettle, put the tea in a tea-ball; fill two cups at a time with boiling water, and hold the ball in the water until the desired strength is secured. At afternoon teas and for iced tea, serve slices of lemon.

RECIPE, No. 111. ICED TEA

Allow one tablespoon of tea for one quart of water, unless you are using some of the choice varieties which do not require so large a proportion. Scald the teapot and have the water just brought to the boiling point. Pour it over the tea and let it stand and steep, but not boil for ten minutes, where it will keep almost at the boiling point. Strain it, add the juice of one lemon and one cup of sugar. Keep it chilled until ready to serve. Half fill tall, slender glasses with chipped ice and fill with the tea. Add sliced lemon

and sugar as desired, and vary by adding a few cloves stuck in the lemon slices, or by a bit of preserved ginger.

RECIPE, No. 112. RECEPTION CHOCOLATE

2 qts. milk.	1 pt. cream.
1 lb. cocoa powder.	2 eggs.
6 tbsp. white sugar.	3 tsp. vanilla extract.

Bring milk to boil, work the cocoa in a little of the cold milk, then stir into the boiling milk till smooth. Boil ten minutes, add the sugar and cream, and stir well while boiling. Turn into a double boiler and keep the water in lower boiler almost at boiling point for half an hour. Then beat the eggs very light, add them and remove immediately from the fire. When cool add the flavoring.

This can be made in the morning, and when ready to serve, put from one to two tablespoons of the preparation into the cup and fill with boiling water.

By cooking the cocoa we have a much more delicious flavor than that obtained by pouring boiling water directly upon the raw cocoa in the cup. The eggs and cream give body and richness. It will serve from sixty to eighty people.

RECIPE, No. 113. CHOCOLATE FOR AFTERNOON TEAS

Boil one and one half pounds of grated chocolate in two quarts of water with one pound of sugar until thick and smooth. Then add two quarts of rich milk heated in double boiler, and keep it hot over boiling water until ready to serve. Add thick whipped cream to each cup when serving.

RECIPE, No. 114. FRUIT PUNCH

Make a lemonade by boiling one quart of water and one pint of sugar for ten minutes, and steep in it the shaved yellow rind of half a lemon. Add the juice of two lemons, strain and cool. Add one pint of strained strawberry juice, one cup of cold tea, one pint of Apollinaris water if you choose, and more sugar if needed. Or, use any mixture of fruit juices you prefer; dilute with ice, and serve bits of fruit in the glass.

LESSON XXIX

CORN

Field Corn has many varieties and colors, but white and yellow are the most common. These are used in many forms after they are fully ripe and dry.

Hulling. The first step in the preparation is the removal of the hull. In the "new process" the corn is kiln-dried, which makes the hull separate easily from the grain. The hull and germ are loosened by machinery and then removed by bolting; the remaining part of the grain is then prepared in several ways, and is known by the following names:

Samp, the whole grains.

Hominy, broken grains, coarse and fine.

Meal, ground coarse, like sugar, *granulated meal*,
ground fine, *bolted meal*,
ground like powder, *corn flour*.

Corn Starch, the starch separated from the other part of the grain. Corn starch is sometimes called corn flour, but it is prepared by a different process, the starch being entirely separated from the other parts of the grain and it is practically pure starch.

The flavor of corn starch is disliked by many persons; probably in some brands of it the separation has not been complete and some of the other substances were removed with the starch. It should be thoroughly cooked at high temperature, and is best when used as a thickening for sauces, soups, and pudding sauces. When used as a substitute for eggs in custard and other milk desserts, it should be cooked thoroughly in the milk before adding the eggs.

Corn Meal is used as a mush and gruel, in a great variety of hot cakes and muffins, in combination with rye meal and Graham flour in brown bread, and in puddings.

Corn has a large amount of starch and but little protein, but what it lacks in protein it makes up in fat, and when combined with milk, or cheese, or eggs, as it usually is, it may well be considered a hearty food. The yellow and the white corn meal are about equal in nutritive value, but the flavor of the white is considered the more delicate.

The protein of corn is not like the gluten in wheat, for it lacks the elastic, tenacious quality and the meal cannot be made into a bread of the light, dry, porous texture of wheat bread. But combined with wheat and rye in brown bread, or with wheat in small cakes and muffins, it is very palatable.

The old process of grinding corn meal is still used in the South and in Rhode Island. The whole grain is ground between stones and generally sifted only by the user. It is known as "water ground" or "wind-mill ground." Owing to the fat in the germ, the moisture in the grain and the heat of the stones in grinding, the meal soon becomes musty and should be bought in small quantities. The flavor is different from that made by the new process. The latter being drier, needs more water in cooking, and also more shortening, as the fat was removed in the germ.

Hulled Corn. This primitive method of preparing corn is still in use and should be better known, for hulled corn has a flavor quite unlike that of any other and may be used in a variety of ways.

The process is long, but one may generally buy it all ready for the table. The corn is steeped in hot water and lye; when the hulls are loosened and eyes or germs are out, it is soaked in several waters till the lye is washed out and then boiled until soft. Enough of the lye remains to give it an agreeable flavor.

Pop Corn. This is a small variety of field corn with very hard pointed kernels. When dry and heated over bright coals, the moisture in the starch cells expands, the air in the grain also expands, and together there is sufficient force to cause an explosion of the hard cell walls; the kernel

turns completely inside out, enveloping the embryo and skin with the swollen starch.

Pop corn is best when crisp and freshly popped; it is eaten with salt and butter, or made into corn balls with syrup. It is generally eaten between meals, and as a tidbit at evening treats; but it might better have a place as a part of the regular meal; with cream or milk as a breakfast food, as a cream soup for luncheon, and the corn balls for dessert.

SUGAR

Sugar is a valuable food stuff, as it gives heat and energy in a form pleasing to the taste, and being soluble, it is easily digested. Only a small portion of plain sugar is needed in the body, for many foods contain it and starchy foods are changed into sugar during digestion.

The greater part of the sugar used in cooking is made from the sugar cane and sugar beet, and we buy it as block or cube sugar, granulated, powdered or confectioner's sugar, and brown sugar. Sugar is used in mixtures such as custards, cake, pudding, preserves, beverages, and on a large scale in making candy.

RECIPE, No. 115. CARAMEL.

Melt one cup of sugar (either brown or white) with one tablespoon of water in a frying-pan. Stir until it becomes of a dark brown color. Add one cup of boiling water; simmer ten minutes, and bottle when cool. This should always be kept on hand, as it is useful for many purposes. It gives a rich, dark color to soups, coffee, and jelly; is more wholesome than browned butter in sauces, and is delicious as a flavoring in custards and pudding sauces.

RECIPE, No. 116. CARAMEL CUSTARD

Melt one cup of granulated sugar in an iron pan over a hot fire. Stir to prevent scorching, and when it is well browned take out about half of it and stir it into one quart

of milk, which should be heating over boiling water. It may harden in the milk, but that will do no harm as it will soon melt. To the remainder of the browned sugar add one half cup of water and let it simmer ten minutes, then set away to cool. Beat six eggs slightly, stir in one half teaspoon of salt, one teaspoon of vanilla and a few drops of extract of almond. Add part of the hot milk and when well mixed strain it into the remainder. Grease several small tin moulds or cups with a slight coating of olive oil or strained butter, fill with the custard and set them into a shallow pan of hot water. Bake in a moderate oven until the custard is firm; when a thin knife is inserted to the bottom and comes out with no trace of milk on it the custard is done. Put away in a cold place, and when ready to serve turn them out carefully on to individual dishes; pour some of the caramel over and put a little whipped cream around the edge.

RECIPE, No. 117. PANOGA

Put three cups of dark brown or maple sugar in a clean saucepan, or the chafing-dish, add one cup rich creamy milk, and boil till it forms a soft ball when dropped in cold water. Add one teaspoon vanilla and beat vigorously as it cools and thickens. Stir in one or two cups of broken English walnuts or pecans. Turn into buttered pans to cool.

RECIPE, No. 118. FRUIT AND NUT PASTE

Take equal parts of best raisins, dates and figs and half as much nuts, or one cup each of the three fruits and one and one half cups of nuts, measured after preparing. Remove the seeds from the raisins, the stones and scales from the dates, the stems from the figs, and the shells from the nuts; the brown skin also if almonds or peanuts are used. One variety or a mixture of nuts may be used. The nuts should be ground through the fine blade of the meat chopper and then rubbed with a pestle to a paste; the raisins and dates also should be minced fine, and if you want it especially nice you may rub the figs through a sieve fine enough to keep

back the seeds. Mix all very thoroughly, then turn it on a board in a bed of confectioner's sugar, and knead it until firm enough to roll out. Roll part of it one half inch thick and cut in half-inch cubes with a sharp knife, and part of it one fourth inch thick, and cut in rounds with the smallest pattie cutter. Dip the roller and the cutter in the sugar to prevent the paste from sticking. Roll the cubes and discs in the sugar until well covered, then put away in a cool place, with confectioner's paper between the layers. These will keep some time in air-tight tin boxes.

PART II

LESSON I

BAKING POWDER BISCUIT AND VARIATIONS

Put into a sieve over a mixing bowl, two cups sifted pastry flour, one teaspoon salt and four teaspoons baking powder. Mix thoroughly and sift. Rub or chop in two tablespoons cold butter, or one of butter and one of lard, till fine and mealy. Wet with about one cup milk into a stiff dough.

The amount of milk required will vary with different kinds of flour, and in dividing or doubling the rule, the milk cannot always be proportioned exactly. When the shortening is soft and seems to moisten the dough, the flour will take up less milk than when the shortening makes a mealy mixture. Bread flour will take more than pastry flour.

Toss about on a well floured board, knead it gently, but effectually, until it is smooth and will not stick.

Use plenty of flour to prevent sticking, but do not knead flour into the dough. There is a knack about it which comes by practice. Roll or pat it very gently with the rolling pin, until half an inch thick, less rather than more. Use a cutter two inches in diameter, — use a four inch cutter for short cake, — place close together in a baking pan. Cut economically, that there may be but few trimmings. Let them stand in the pan at least ten minutes before baking; then bake in a hot, but not too hot, oven, about ten minutes. When done, brush over with a little melted butter.

Now because these biscuits are not two or three inches high when they are done, do not think they are not light or right. Remember the biscuits were thin when cut, and if

they have doubled in height that is sufficient; they are more wholesome when they split into two thin crusts, than when so thick that there is an excess of the softer inside portion, which, while it may be pleasing to some palates, is less digestible than the crusts.

Cream of tartar is only slightly soluble in cold water, and the gas is not all liberated from the bicarbonate of soda until heat is applied, therefore it does no harm for a dough made with a cream of tartar baking powder to stand a while.

RECIPE, No. 119. SHORT CAKE

Make a dough after the recipe for baking powder biscuit. Bake, split or tear open, spread with softened butter, put together again, and serve at once. Have strawberries mashed and sweetened, and as you serve the cakes lay them open and cover generously with the fruit. In this way the cakes are not made heavy by long soaking, and if all are not needed, the fruit will keep better apart.

For dessert, use stewed apple sauce, baked bananas, stewed prunes, or canned blackberries to give variety. Biscuits made in this way are often served as a garnish for Chicken Fricassee, or Creamed Oysters, in place of toast.

LESSON II

BROILING

Broiling, from *bruler*, meaning "to burn," is cooking directly over the hot coals. It is the hottest form of cooking. The heat is so intense that the food would be burned quickly if allowed to remain continuously over the fire or under the gas flame. Burning is avoided by turning the meat frequently. This rapid cooking by direct, intense heat, combined with the action of the air, which has free access to the meat, gives a flavor quite unlike that obtained by cooking meat in water.

Only certain kinds of meat are suitable for broiling. A pound of beef cut in cubical form could not be cooked inside sufficiently without burning the outside. But the same weight of beef, when cut in the form of a slice about an inch thick, can be broiled perfectly, and has a better flavor than when cooked in any other way.

Meat for broiling should have tender fibres, much juice, and but little fat, bone, or gristle. There is neither time nor moisture to soften tough fibres, and slow, long-continued heat is necessary to cook tough meat. If there be much fat it will melt, drip into the fire, and smoke the meat. Slices cut from an inch to an inch and a half in thickness, and taken from the thick part of the round, the rump, and the sirloin, are the best for broiling. The tender parts of mutton, small chickens, some kinds of game and birds, tripe and liver, thin slices of ham and bacon, any small, thin fish, and oysters are also cooked by broiling. Veal and pork need to be cooked too thoroughly for this process to be done successfully.

The fire for broiling should be bright-red, but not blazing,

and should be near the top of the fire-box. It should be made ready some time before it is needed that it may be in the proper condition at the last moment. There should be little or no flame, as that will smoke the meat. The oven damper should always be open during the broiling, that the smoke of the dripping fat, and the poisonous gases may be carried into the chimney. A bed of hard-wood coals is the best fire for broiling. Next to this is a charcoal fire. Wood gives an entirely different and better flavor to steak from that obtained by a coal fire. Some stoves for burning wood have a hearth in front into which the bright coals may be drawn for the cooking of the steak.

A double wire broiler is the best utensil for broiling. Grease it with a bit of fat from the meat or with salt pork. Place the thickest part of whatever is to be cooked next to the middle of the broiler. If there is a fat edge on the steak, place this uppermost. Then, as the fat melts, it drips down over the meat, and by thus basting keeps it from becoming too dry. Hold the broiler slanting down into the fire, and if there is a blaze do not lift the broiler up into the smoke, but keep it in the flame, turning it often. Use a coarse towel to protect the hand if the heat be very great.

In every form of cooking meat, where the meat is to be eaten, the juices should be retained in the meat; this is especially important in broiling, for if not retained in the meat they drip into the fire. Do not salt the meat, as salt draws out the juices. Remove the bone and part of the fat. Place the meat close to the fire. The intense heat instantly sears the albumin and fibrin on that side and starts the flow of the juices; as they become hot they rise and if the meat be cooked long on one side they will force their way through the fibres, and form little pools on the surface of the meat, which run off and drip into the fire, and so feed the fire with the best part of the meat. But by turning the meat before the juices ooze out, the other surface is brought next to the fire and seared, and the juices cannot escape in that direction, so they rise again and try to get through the top. But that being already hardened they have to stay inside the meat. As the water of the juices is converted into

steam by the heat, it expands and puffs the meat. If the meat be not turned often, or the broiling be carried on too long, these watery juices will gradually ooze between the fibres to the surface and be evaporated, leaving the meat dry, leathery, and not easily digested.

Meat should be broiled only long enough to loosen all the fibres and start the flow of the juices. As long as there is juice inside, the steam will cause the meat to spring up instantly when pressed with a knife, and when it ceases to do this the juices have begun to evaporate, and the meat shrinks. Meat when broiled properly should be pink and juicy, not raw and purple, nor brown and dry. It should be so full of juice that when cut on the platter no other gravy will be required than its own hot savory juices.

Broiled food should be served very hot. All other dishes should be prepared first, the platter hot and the seasoning ready. Have a long shallow pan near to hold under the broiler when it is removed from the fire, and thus avoid dropping the grease on the floor. When everything else is ready, begin to broil, and do not leave the broiler an instant until the meat is cooked. Turn the broiler over every ten seconds, counting as the clock ticks, and always keep the broiler over the fire while turning, and not off over the stove or floor. If there be much fat, lift the broiler over the pan while turning, and let the fat drip into the pan. The burning fat will not smoke the meat if the meat be kept close to the coals, but if held on the top of the flame it will soon be smoked. After the first thorough searing hold the broiler farther from the fire. When the meat is done, rest the broiler on the pan; take the meat off carefully, without sticking the fork into it, and put it on the hot platter. Season with salt and, if desired, with butter and pepper, but do not destroy the fine flavor of the meat by too much seasoning. Wipe the edge of the platter before sending it to the table.

BROILING WITH GAS

Place large steaks on the broiler, close to the full blaze, and when slightly seared turn the meat over; when that

side is brown, reduce the heat and let it cook without turning again until nearly done as the heat from the oven cooks the under side. The fat drips into the pan and will burn and blaze if the heat be too great. If not burned it should be poured over the steak; but the fat from lamb chops should be used as dripping.

Do not use the broiler of the range for a small piece of meat. Save the fat and the labor of cleaning the pan by using a small wire rack on a granite plate. The time of cooking depends upon the thickness of the meat, varying from eight to fifteen minutes.

RECIPE, No. 120. BROILED STEAK

Wipe, trim off the superfluous fat, and remove the bone. Grease the broiler with some of the fat. Broil over a clear fire, turning every ten seconds. Cook three or four minutes if liked rare; longer, if well done. Serve on a hot platter; season with salt and butter.

RECIPE, No. 121. BROILED MEAT CAKES

Chop tough, raw, lean beef quite fine. Season with salt, pepper, and a few drops of onion juice. Make it into small flat cakes and broil on a hot frying-pan. Spread with a little butter and serve very hot.

RECIPE, No. 122. HAMBURGER STEAK

Proceed as for Meat Cakes, using onions which have been sliced and cooked in dripping until slightly colored; drain and put them in the inside when you shape the meat into cakes.

LESSON III

PAN BROILING

It is sometimes inconvenient to broil over the coals, and nearly the same effect may be obtained by cooking in a dry, hissing-hot frying-pan. Heat the pan to a blue heat, and with a perfectly smooth pan no greasing is necessary. Sear the meat quickly on one side, then turn with a broad knife and fork, — without cutting into the meat, — and brown the other side, before any juice escapes into the pan. Cook from four to eight minutes, turning twice, and add a sprinkling of salt just before the last turning.

Chops have a better flavor broiled in this way than when broiled over coals, as the fat may be cooked till crisp, without becoming smoked, and the lean meat will not be overcooked.

If the pan be hot enough and no fat used (and it seems difficult to convince some people that none need be used), this is not frying; it is broiling on hot iron or pan broiling; and the flavor and texture are very different from those of sautéed meat. If there be much fat on the meat it should be drained off as it melts.

The smaller and thinner the article to be cooked, the hotter should be the fire.

The larger the article, the more temperate the fire, or the greater the distance from the fire.

Meat of close, compact fibre takes longer to soften and start the flow of the juices, than meat of tender fibre.

RECIPE, No. 123. MUTTON CHOP (PAN BROILED)

Wipe, remove the pink skin and extra fat. Have a frying-pan hissing hot, without any fat; put in the chops and

cook one minute, turn and sear the other side; then cook more slowly until done, — five minutes, if liked rare. Stand them up on the fat edge to brown the fat, without overcooking the meat. When nearly done sprinkle a little salt on each side. Drain on paper and serve very hot, on a hot dish, without a drop of grease.

RECIPE, No. 124. BROILED FISH

To broil mackerel, white-fish, small blue-fish, trout, small cod, shad, or any other thin fish, split them down the back and remove the head and tail. Sometimes it is well to remove the backbone also.

To broil halibut, salmon, and other thick fish, cut them into inch-slices across the backbone, and remove the skin and bone. Cut flounder, bass, and chicken halibut into fillets, or the natural divisions each side of the bone. Oily fish need only salt and pepper, but dry white-fish should be spread with soft butter before broiling.

Grease a double wire broiler with salt pork rind. Put the thickest edge of the fish next the middle of the broiler; broil the flesh side first. Lift it frequently for a moment that it may not burn, but do not turn it over until the flesh is brown and done. Cook the other side just enough to crisp the skin. The time will vary with the thickness of the fish.

The flesh, when done, should look white and firm, and should separate easily from the bone. Loosen the fish from each side of the broiler, open the broiler and slide off the fish, or hold a platter over the skin side of the fish, and invert platter and broiler together. Season with butter, salt and pepper, and lemon juice, if liked.

Some acid condiment adds to the flavor of the fish.

TIME-TABLE FOR BROILING

Small, thin fish	5 to 8 m.
Thick fish	12 to 15 m.

Questions on Lessons I, II, and III

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| What is the meaning of "broil"? | How do you place the meat in the broiler? |
| How does the degree of heat in broiling compare with other forms of cooking? | Do we hold the meat over the flame or in the flame near the coals? |
| How do we avoid burning food when broiling it? | Why not cook the meat wholly on one side before turning it? |
| How should meat be cut, and what kinds of meat are suitable for broiling? | How do we broil with gas? |
| What kind of a fire is needed in broiling? | Should the fat from meat be used? |
| Why should the oven damper be open during broiling? | How would you broil a small piece of meat? |
| Why do we grease the grid-iron? | How would you make tough meat suitable for broiling? |
| | What is pan broiling? |
| | How would you cook the fat of chops? |

LESSON IV

COOKING MEAT IN WATER

The fibrin of meat is hardened and contracted by dry, intense heat, but softened by moist, moderate, and long-continued heat. Albumin dissolves in cold water, but hardens in hot water and by dry heat. Therefore all meat that has a tough, hard, or flabby fibre, with much gristle, tendon, and bone, should be cooked in water, and at a moderate heat.

We cook meat in water for three distinct purposes :

First, to keep the nutriment within the meat, as in boiled meat, and some forms of baked meat.

Second, to draw nutriment out into the water, as in soups and meat broths.

Third, to have the nutriment partly in the meat and partly in the water, as in stews, where we eat the broth with the meat.

BOILED MEAT

In boiling meat we leave the meat whole that only a small surface may be exposed. Plunge it into boiling salted water, enough to cover, and keep it there for five or ten minutes. This hardens the albumin over the entire surface and makes a coating through which the juices cannot escape. Then move the kettle where the water will be just below the boiling-point. Cover tightly to keep in the steam and the volatile, aromatic extractives which give flavor to the meat. A small amount of albumin from the outer surface will be dissolved and rise as scum. This should be removed, or it will settle on the meat and render it uninviting in appearance. The salt coagulates this albumin and helps it to rise. It also slightly raises the boiling-point of the water, and by increasing its density aids in preventing the escape of the juices.

Meat cooked in this slow gentle way requires a longer time than when the water boils furiously, but it is made more tender, and has a better flavor. It will take fifteen or twenty minutes for the heat to penetrate to the center of the meat before the cooking process begins. Then allow twelve or fifteen minutes for each pound of meat. Two pounds in a cubical form will require a longer time than the same weight cut thin and having a broad surface.

As meat varies, according to its age and feeding, in the tenderness of its fibre and the amount of connective tissue, gristle, and tendon, it is safer to allow at least an hour for the boiling or stewing of any kind, whatever the shape or weight; then increase the time from two to five hours as per the time-table.

Notwithstanding the pains we take to keep the nutriment in the meat, some portion of it escapes into the water, and therefore the water should be saved and used for a gravy, or in warming over the meat.

RECIPE, No. 125. BOILED MUTTON

Wipe, remove the fat, and put the meat into well-salted boiling water. Boil ten minutes. Skim and simmer at least an hour, or until tender. One quarter of a cup of rice is sometimes boiled with the mutton. Serve with thickened gravy or parsley sauce poured over the mutton.

RECIPE, No. 126. GRAVY FOR MUTTON

To each cup of boiling water in which the mutton was cooked add one tablespoon of flour moistened with a little cold water, one teaspoon vinegar, speck of pepper, and one eighth teaspoon salt. Boil five minutes, stirring till smooth. Add one tablespoon fine chopped parsley, or capers if desired.

RECIPE, No. 127. BOILED DINNER

4 lbs. corned beef.
2 beets.
1 small cabbage.
2 small carrots.

1 small French turnip.
6 potatoes.
1 small squash.
2 small parsnips.

Wash the meat quickly in cold water and, if very salt, soak it one half hour. Put it in the kettle, cover with boiling water, and simmer three to five hours, or until tender. Wash the vegetables, scrape the carrots and parsnips, and cut the cabbage into quarters; pare the turnip and squash, cut into three quarter inch slices, and pare the potatoes. Two hours before dinner-time skim off all the fat from the liquid and add more boiling water. Remove the meat when tender, then put in the carrots, afterward the cabbage and turnip, and one half hour before dinner add the squash, parsnips, and potatoes. Cook the beets separately. When tender take the vegetables up carefully, drain the water from the cabbage by pressing it in a colander, slice the carrots and beets, and cover the beets with vinegar. Put the meat in the center of a large dish, and serve the carrots, turnips, and potatoes round the edge, with the squash, cabbage, parsnips, and beets in separate dishes.

RECIPE, No. 128. GENERAL DIRECTIONS FOR BOILED MEAT

Large pieces. Wipe and trim; immerse in boiling water to keep juices inside. Skim to improve appearance; add salt to improve flavor. Cook slowly, with a slight bubbling on one side, to make fibre tender; rapid boiling washes out connective tissue. Time depends on cubical size; a four pound cube takes more time than the same weight if long and thin. Cook till meat leaves the bone. For corned beef and tongue only slightly salted, use boiling water; if more than three days in the brine, use cold water and heat slowly, or soak for an hour in cold water and then put into boiling water. For ham, soak over night in cold water, put into fresh cold water in large kettle, and cook gently till skin will peel. Salt meat should be kept covered with water, but fresh meat and chickens may have little or much, as preferred. When only a little is used the process is a kind of steaming.

LESSON V

LEFT OVERS

To be able to prepare attractive dishes from the odds and ends that are left over is not only desirable, but should be regarded as a duty; for it is wrong to waste food, even if we have abundant means. By waste we do not mean such remnants of food as are given away or fed to animals, but all good food which is thrown into the refuse barrel or the fire, because there is so little of it.

With care not a scrap of food need be wasted. Because there is not enough for an entire meal, or for every member of the family, is no reason for throwing it away. By combining small portions of different foods that will blend agreeably, a large dish may be prepared.

Such pieces of meat as have been cooked until they are tender, only need to be looked over carefully and the bones, skin, and gristle removed with some of the fat before chopping them. But meat which you may have occasion to use at home, such as the tough ends of steak and chops, and the harder and poorer parts of roast meat, should be cooked slowly in just water enough to cover until they are tender. They may then be cut fine and used in any of the following ways.

The secret of warming over meat is to warm quickly such parts as are already tender, and to make tender by long, slow cooking such as are hard or tough. Care in removing all objectionable portions and a judicious use of seasoning materials are also necessary.

The chief objection to hash is the presence of small bones, hard gristle, and skin, in the mixture; or the greasy, half-browned, soggy condition in which it is served. But when carefully prepared it is a savory and palatable dish. It is not necessary to have corned beef for making hash, as many

suppose. Fresh beef, if made tender by stewing and seasoning properly, is more wholesome. Hash may be varied by making it into round, flat cakes and browning each side, or by using warm boiled rice instead of potato, with such seasoning as may be desired.

Other easy and attractive ways of serving nearly every kind of cooked meat or fish are cottage-pie and scalloped meat. The latter admits of a great variety of combinations, care being taken to use such foods as are palatable when combined. Potatoes are best with beef or fish. Rice, macaroni, oysters, and bread crumbs may be used with mutton, veal, or chicken. Onions and tomatoes improve many kinds of meat. White sauces are best for fish and light meats; brown gravies are best for dark meats; and tomato or some acid sauce blends well with most combinations.

All the bones and scraps of gristle and fat that are not used in the made-over dishes should be covered with cold water and simmered until the bones are clean and the gristle dissolved. Then strain the water; throw the scraps away, and when the liquid is cool, remove the fat and clarify it for dripping; use the water for gravies with warmed-over meat, or combine it with some vegetable pulp and use it for soups.

RECIPE, No. 129. HASH

One cup tender cooked meat chopped fine, two cups hot mashed potato, one half teaspoon salt, one fourth teaspoon pepper. Mix until there are no lumps.

Put two or three tablespoons of hot water into a spider. Melt in one tablespoon of butter or dripping. Put in the hash, and let it simmer slowly till it has absorbed the water and formed a brown crust. Do not stir it. Fold over and turn out on a hot platter.

RECIPE, No. 130. MINCED MEAT ON TOAST

Remove the fat and gristle and chop the meat fine. To one cup of meat, add one half teaspoon of salt, a speck of pepper, and one half cup thickened gravy. Heat quickly in a saucepan and pour over slices of toast. Serve hot.

RECIPE, No. 131. COTTAGE PIE

Chop cold meat fine. Boil and mash some potatoes. To every cup of meat add one half teaspoon salt, one fourth teaspoon pepper, a speck nutmeg, and one half cup of gravy or stock. Put the meat, seasoning, and gravy into a pie dish; cover it with mashed potato and bake in the oven till golden brown. Omit the nutmeg and add one teaspoon of finely chopped onion if liked.

RECIPE, No. 132. TOMATO SAUCE

Melt two tablespoons butter, in a saucepan; cook in it two tablespoons fine chopped onion until yellow, add two tablespoons flour, stirring well. Add, gradually, one cup mutton liquor, and one half cup strained tomato. Season with one half teaspoon salt and one fourth teaspoon pepper.

RECIPE, No. 133. BROWN SAUCE OR GRAVY, FOR WARMING OVER MEAT

In nearly every case one can have stock to use in making this gravy, for should there be none of the usual stock made expressly for soups, one can stew the bones and trimmings of meat in water to cover, till the richness is all extracted, and then strain out the scraps and use the liquor. Water in which the best portions of meat have been stewed makes a good stock for this purpose.

Brown one tablespoon of dripping in the frying pan and cook in it one tablespoon of minced onion, if you like. Stir in two tablespoons of flour and add gradually one cup of the stock or meat liquor. Add salt and pepper to taste (about one half teaspoon of salt and one fourth teaspoon of pepper); the amount will depend upon how much the meat was seasoned in the first cooking. Season also with lemon juice, Worcestershire sauce, cayenne, chopped parsley or pickles according to the kind of meat. Mix with this any platter or made gravy that may be left over.

RECIPE, No. 134. LYONNAISE POTATOES

1 pt. cold boiled potatoes.	1 tbsp. minced onion.
$\frac{1}{2}$ tsp. salt.	1 tbsp. dripping.
$\frac{1}{4}$ tsp. pepper.	1 tbsp. chopped parsley.

Cut the potatoes into half-inch dice and season with salt and pepper. Fry the onion in the hot dripping until light brown; add the potatoes: stir with a fork till they have absorbed the fat. Sprinkle the parsley over and serve hot. One teaspoon of vinegar improves the flavor.

RECIPE, No. 135. CREAMED POTATOES

1 pt. cold potatoes.	1 tbsp. butter.
$\frac{1}{2}$ c. milk.	$\frac{1}{2}$ tsp. salt.
spk. pepper.	1 tsp. chopped parsley.

Cut the potatoes into dice or thin slices. Put the milk into a shallow pan, and when hot add the potatoes and cook until they have absorbed nearly all the milk. Add the butter and seasoning, cook five minutes longer, and serve hot.

RECIPE, No. 136. SCALLOPED MEAT, FISH, AND OYSTERS

1 c. sauce; 1 c. cracker crumbs moistened in $\frac{1}{4}$ c. melted butter; 2 c. meat or fish mixture.

Line the deep baking dish with one fourth of the crumbs, add a layer of mixture, a layer of sauce, another fourth of crumbs and a layer of each and cover with the remaining half of the crumbs. Bake until crumbs are brown.

In this, as in all warmed-over dishes of meat or fish, discard anything inedible, and cut meat into half-inch bits; if very tough, stew it first, for the oven cooking will not always make it tender.

Oysters may be used alone with their juice and the crumbs.

The following combinations are appetizing:

Mutton: oysters, macaroni, and white or brown sauce.

Chicken: rice, oysters or celery and white sauce.

Beef: onions, diced potatoes, and brown gravy or sauce.

Veal: stuffing, rice, turnip and tomato sauce.

Ham: mustard, hard eggs, and white sauce.

Fish: onions, pickles, and tomato sauce.

Oysters: celery, bacon and white sauce.

Questions on Lessons IV and V

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| What are our three objects in cooking meat? | How may we use the fat of meat? |
| How may meat be cooked in water? | How do you prepare tender meat for made-over dishes? |
| What kind of a piece of meat would be best to boil? | What must first be done with tough meat? |
| Why do we keep it whole? | How many kinds of meat can you think of that might be prepared as we did the hash? |
| Why use boiling water? | How many like the scalloped mutton? |
| What is the advantage in slow cooking? | What use may be made of the bones, gristle, and fat? |
| What use can we make of the water in which we cook meat? | What is macaroni? |
| How do we improve the flavor of meat cooked in water? | Why is it better to cook flour for gravy in hot fat instead of in hot water? |
| What is smothered meat? | |

LESSON VI

PASTRY

RECIPE, No. 137. PASTRY

1 hp. c. pastry flour.	2 tbsp. dripping or butter.
$\frac{1}{2}$ tsp. baking-powder.	2 tbsp. lard.
$\frac{1}{2}$ tsp. salt.	

Sift flour, salt, and baking-powder together, and rub or chop in the dripping. Mix quite stiff with cold water (one-fourth cup or more). Turn out on a floured board, pat into a flat cake, roll out one fourth inch thick, and spread the lard over the surface. Sprinkle with flour, fold over and over, and roll out again into a long narrow strip. Then roll over and over like a jelly roll, and cut off from the end as needed. This recipe makes just enough for two crusts for plates of the usual size, or one pie with two crusts. Divide the dough into two parts, turn each half over on the side and pat into a round shape. Then roll uniformly, keeping the shape circular till it will fit the plate.

RECIPE, No. 138. PIES WITH NO UNDER CRUST

Make all fruit pies in a deep earthen dish and without an under crust. Fill the dish with fruit; add sugar and cold water. Cut a strip of paste one half inch wide, wet the edge of the dish, lay the strip of paste on the wet edge, wet the paste, then cover with a piece of paste the size of the top of the dish, press the edges gently, trim and bake in a hot oven about thirty minutes, or until the fruit is soft. By using a fluted cutter the edge of the pie will be more attractive.

RECIPE, No. 139. RHUBARB PIE

Wash and cut the stalks into inch-pieces. Allow one half cup sugar and one fourth cup water to each cup of fruit.

RECIPE, No. 140. APPLE PIE

Wipe and cut sour apples in quarters, remove the cores and skins, and cut each quarter in two pieces lengthwise. Allow two tablespoons of sugar for an ordinary apple, and if not juicy add one half tablespoon water.

RECIPE, No. 141. BERRY PIES

Canned berries may be used when time is limited. Make crust as directed and bake in deep plate with no under crust.

RECIPE, No. 142. PIES WITH NO UPPER CRUST

Line a shallow plate with the paste, let it come one half inch over the edge, turn the paste under to fit the plate, and make a scalloped edge by pressing it with the right forefinger between the thumb and finger of the left hand; or roll the crust to fit the plate, wet the edge, and lay a narrow strip of paste on the rim.

RECIPE, No. 143. SQUASH PIE

1½ c. squash.	½ tsp. salt.
1 c. boiling milk.	¼ tsp. cinnamon.
½ c. sugar.	1 egg, beaten.

Use a dry mealy squash, stew and sift it. Stir hot milk into the squash; mix dry materials; add them to the beaten egg; blend well, and then stir it into the squash. Fill the plate and bake thirty minutes, or until it puffs up all over.

RECIPE, No. 144. CUSTARD PIE

3 eggs.	½ tsp. nutmeg.
6 tbsp. sugar.	3 c. scalded milk.
½ tsp. salt.	

Beat the egg-yolks until light, add sugar and salt, and beat again. Beat whites until light and foamy but not dry; mix them with the yolks; add spice and scalded milk and pour into the plate. Bake slowly, and the moment it puffs insert a knife blade, and if it comes out clean it is done.

LESSON VII

PIES WITH TWO CRUSTS

Mince and other pies which are to have both upper and under crusts should be baked on flat or shallow plates.

Roll each crust to fit the plate that there may be no waste. The upper crust may be rolled a trifle larger, and the fullness thrown back into the centre to allow for the shrinking in baking. Make several holes in the upper crust of meat pies to let the steam escape.

RECIPE, No. 145. PLAIN MINCE PIES

1 c. meat.	$\frac{1}{2}$ c. raisins.
2 c. apples.	$\frac{1}{2}$ c. currants.
1 tsp. salt.	1 c. of sweet-pickle vinegar, or
1 tsp. cinnamon.	$\frac{1}{2}$ c. water and juice of
1 tsp. allspice.	2 lemons.
1 c. brown sugar.	

Use any remnants of cold steak or beef, which have been simmered till tender. Chop fine the meat, apples, and the stoned raisins. If you have no sweet-pickle vinegar boil the plain vinegar, sugar, spice, and raisins together for ten minutes. Then add the other materials and cook until the apples are soft.

RECIPE, No. 146. RICH PASTRY FOR LEMON PIE

Mix scant one half teaspoon salt with one and one fourth cups pastry flour. Chop in a quarter cup lard, and mix with cold water into stiff dough. Pound it out flat and half an inch thick. Put on butter in little dabs, roll up, and pat out again. Do this four times, using one fourth cup in all. Pat

it out again and lay on ice until chilled. Then roll it an inch larger than the plate and cut off for a rim ; put this strip on the edge, first wetting the under paste.

RECIPE, No. 147. FILLING FOR LEMON PIE

Mix three tablespoons cornstarch with one cup sugar, add one cup boiling water and boil five minutes. Add two tablespoons butter, the grated rind of half and juice of one lemon and one well beaten egg. Turn into the crust and bake until the crust is done. Cool and cover with a meringue made with the whites of two eggs, two tablespoons powdered sugar, and one teaspoon lemon juice. Pile it on lightly and color a delicate brown. If preferred, cover with the pastry and press the edges lightly.

LESSON VIII

BAKED MEAT (IN WATER)

Meat is sometimes cooked in water in the oven instead of over the fire, and this way of cooking is often erroneously called roasting, but it is a form of baking.

Roasting means to heat violently and is done either before the open fire, or in a hot oven without any water. If water be used the meat cannot be made any hotter than boiling water; and a much greater degree of heat is required to cook meats with a tender fibre and rich in juice and flavor, so that the outside surface may be quickly seared thus preventing the escape of the juices.

Tough pieces, which require the solvent power of water, and which are lacking in flavor, are improved by the addition of a savory stuffing, or by seasoning the water with herbs and vegetables; also by first browning the meat in hot dripping. The flavor imparted by the partially confined heat of the oven is stronger than that of boiling.

Sometimes meat is steamed over boiling water until it is made tender, then put in the oven to be browned and receive the flavor which can be obtained only by means of this dry heat.

A convenient way is to put the meat into a tightly covered stone jar, or bean pot, without water; place it in a moderate oven for one hour, or until some juice is drawn out, then increase the heat and cook a half hour for every pound of meat. There will be a large quantity of juice in the jar, which should be diluted with water, thickened, and used as a gravy. The meat may be cut in small pieces when the time for cooking is limited.

These are all savory and wholesome methods of cooking

the less expensive parts of meat. Fresh meat cooked properly is equally palatable and far more nutritious than corned or salt meat, which forms too large a part of the diet of many people.

GENERAL RULE FOR BAKED MEAT

All meat for baking or roasting should be dredged all over with salt and flour, but not until just before cooking. Salt draws out a little of the juice, but the flour absorbs it, and when the heat hardens the albumin, this helps to make a thick crust through which the juices cannot escape.

Use no water at first, nor at all with small pieces which require quick cooking or to be done rare; but after the first searing, large pieces that require to be cooked thoroughly may have a little water added to prevent them from burning or becoming too dry. Baste often and bake.

Meat which has a layer of fat on the top, — such as ribs of beef, loin of mutton or of pork, — if put into the pan with the fat side up, will need but little basting. The fat in melting bastes the meat.

CASSEROLE COOKING

The principle in this method of cooking is the same as that in stewing, pot roasting, and the other combinations of dry and moist heat. The modern name for the method comes from the utensil which is used. A casserole is an earthenware dish, round or oval in shape, — sometimes with a handle on the side, — having a tightly fitting cover, thus keeping the steam, heat, and odor within in the food. Casseroles may be found in various sizes and some are fitted into a holder. Covered earthenware jars and bean pots have long been used for this method of cooking, but they are neither convenient nor attractive for serving. The shape, color, and holder in which the casserole rests, make it an attractive dish for the table. The food, served correctly from the dish, is hot and remains hot during the meal. Having been tightly covered during the long, slow process of steaming, the food is tender and retains all its savory odors.

POT ROASTING

Meat may be steamed in its own juices and the method is called Pot Roasting. The meat should be left whole for convenience in slicing and serving neatly, particularly if to be served cold. It is cooked over the fire with a little water in the kettle to prevent burning. The water should be kept at the simmering point, and be replenished as needed. By watching it and letting the water cook nearly out so that the meat begins to sizzle, but not burn, the flavor of browning is developed. Then add a little hot water and continue the simmering. Repeat this several times. Some of the juices are drawn out into the water and the steam heats and softens the meat. These juices make a rich and savory gravy.

RECIPE, No. 148. GRAVY FOR ROAST MEAT.

To make it in the pan, pour off nearly all the fat. Put the pan on the stove and add dry flour until the fat is all absorbed. Then add hot water or hot stock, and stir as it thickens. Cook five to eight minutes, season, and strain.

RECIPE, No. 149. BAKED HEART

Wash the heart thoroughly in cold water to remove the blood and cut out the veins and arteries. Make a stuffing with two tablespoons bread crumbs, one teaspoon chopped onions (which must first be scalded), one half teaspoon powdered sage, one fourth teaspoon salt, and a speck of pepper. Moisten it with milk or water. Stuff this into the cavity and sew the edges together. Peel, slice, and brown an onion in two tablespoons drippings; then brown the heart in the same fat; put it with the onion into a deep dish, and half cover with boiling water. Cover the dish and bake in a hot oven one hour, or until tender, basting every ten minutes, and add more water if needed.

RECIPE, No. 150. STEWED RIBS OF BEEF

This is a convenient dish, for, after it is once prepared, it takes care of itself, and it is a palatable and satisfying dinner,

suitable for cold weather. Select two or three pounds from the chuck rib of beef and have it cut into small pieces. Wipe carefully and remove any crumbs of bone. Be careful about these bone crumbs, especially in dishes where the broth is to be used without straining. Prepare also one small carrot sliced and one fourth of a sweet green pepper freed from seeds. Remove every seed, for one, if left, will spoil the whole dish. Mix the prepared vegetables and then mix two tablespoons of pearl sago, one tablespoon of bread crumbs, one tablespoon of vinegar, one eighth of a nutmeg grated, one tablespoon of salt, one fourth tablespoon of pepper, and the grated rind of one fourth of a lemon. Pack the meat closely in a stone jar, or a casserole if large enough, or in a bean pot, putting it in layers with the vegetables and seasonings. Add cold water to cover the whole; then cover the jar tightly and let it bake slowly for about five hours.

RECIPE, No. 151. SMOTHERED BEEF

Cut one pound of round of beef into one-inch cubes and put it into a tightly covered jar and into the oven for one hour. It should be in a cool part of the oven for the first half hour and then the heat be increased. Thicken and season the juice and serve as a gravy.

RECIPE, No. 152. SMOTHERED CHICKEN

Select a tender and young chicken and after it has been cut into joints, rub the flesh with salt, and powder with paprika. When thus prepared, put the chicken into a casserole or stewpan with a tight cover. Add a quart can of tomatoes, but no water. Cover and let them cook slowly on top of the range or in the oven until the chicken is done. Arrange the chicken on a hot platter and add a cup of cream to the tomato. Add more salt and paprika if needed and when hot, pour the sauce over the chicken just before it is served.

Paprika or Hungarian pepper is made from a variety of sweet red pepper and is much less fiery than cayenne.

TIME-TABLE FOR BAKING MEATS

Beef, sirloin, rare, per lb.	. . . . .	8 to 10	m.
Beef, sirloin, well done, per lb.	. . . . .	12 to 15	"
Beef, rolled rib or rump, per lb.	. . . . .	12 to 15	"
Beef, long or short fillet	. . . . .	20 to 30	"
Mutton, rare, per lb.	. . . . .	10	"
Mutton, well done, per lb.	. . . . .	15	"
Lamb, " " "	. . . . .	15	"
Veal, " " "	. . . . .	20	"
Pork, " " "	. . . . .	30	"
Turkey, 10 lbs. wt.	. . . . .	3	hrs.
Chickens, 3 to 4 lbs. wt.	. . . . .	1 to 1½	"
Goose, 8 lbs.	. . . . .	2	"
Tame duck	. . . . .	40 to 60	m.
Game "	. . . . .	30 to 40	"
Grouse	. . . . .	30	"
Pigeons	. . . . .	30	"
Small birds	. . . . .	15 to 20	"
Venison, per lb.	. . . . .	15	"

LESSON IX

STEWES

When the object of cooking is to have the nutriment partly in the meat and partly in the water, the dish is called a stew.

Use a small quantity of water, — less than in making soups, — and cook at a moderate heat for a long time. The word stew means a slow, moist, gentle heat. As some of the nutriment is to be in the meat cut it into pieces convenient for serving. Put the bones, gristly portions, and the poorer parts of the lean meat into cold water. This draws out enough nutriment to enrich the broth. When the water boils, add the tender portions that their juices may be kept in them. By this slow, steady simmering, rather than by fierce boiling, the fibres are softened, and the coarsest and cheapest kinds of meat are made tender and nutritious.

Any meat that is juicy and not tough may be first browned on the outside to retain the juice and improve the flavor; but should you have any cold pieces of roast beef or steak, these may be used and will have the same effect. Some proteids are soluble in vegetable acids, such as those in vinegar and lemon juice. If coarse, tough pieces of meat are soaked in vinegar, the fibres will be softened and the meat made more tender. Meat containing much gristle should be put into cold water. Meat from the upper part of the shin, the aitch bone, flank, neck, and shoulder, — the less expensive parts, — are suitable for stews.

Fowls, tough game, the tougher parts of mutton, lamb, or veal, any meats which have been previously cooked, and any kind of large white fish may be stewed. Meat that has some bone and fat makes a richer stew. A great variety of economical, wholesome, and palatable dishes may

be prepared as stews, and there are many names given to this form of cooking.

A *stew* usually has vegetables and dumplings cooked with the meat.

A *haricot* of mutton or any other meat is a stew with the meat and vegetables cut fine, — into bits, the size of a haricot bean.

A *ragout* is a stew highly flavored with wine.

A *salmi* is a stew of game.

A *chowder* is a stew of fish.

A *fricassee* is a form of stewing where the meat is sautéed or browned in fat, either before or after stewing, and is usually served without vegetables.

A *pot-pie* is a stew with the dough put on as a crust instead of in the form of dumplings.

Braising is a form of stewing usually done in a covered pan in the oven. The slow, uniform heat from the confined hot air in the oven gives a richer, stronger flavor than that obtained by stewing over the fire.

Onions, carrots, turnips, and potatoes are often used in a stew. Onions may be put in with the meat, but the other vegetables should be cut small, and added about half an hour before the stew is done. The kettle should be drawn forward, that the water may boil, not simmer, while the vegetables are cooking. This will not harm the meat as it would if boiled rapidly at first. Remove the bones and fat before adding the vegetables.

A dumpling is a small biscuit-like portion of dough dropped or dumped quickly into the boiling liquid. There should be only liquid enough to come nearly to the top of the meat and vegetables, that the dumplings may rest on them and not sink into the liquid. The steam from the savory broth will cook the dumplings and impart a richer flavor than if cooked in a steamer over the stew. Cover the kettle closely, as soon as the dumplings are in, and let the stew boil steadily ten minutes, without lifting the cover. Serve them at once. As they are to be eaten with meat they require no shortening. The same dough may be cut into small cakes and baked as biscuit.

RECIPE, No. 153. BEEF STEW

$\frac{1}{2}$ lb. beef.	2 potatoes.
$\frac{1}{2}$ onion.	Salt and pepper.
$\frac{1}{4}$ c. turnip, cut in half-inch dice.	Flour.
$\frac{1}{4}$ c. carrot, diced.	Water to cover.

Wipe the meat, cut it into small pieces, and remove all the fine crumbly bones. Put the larger bones and tough meat into the kettle and cover with cold water. Melt the fat in a frying-pan, dredge the tender meat with salt, pepper, and flour, and brown it in the hot fat. Brown the sliced onions also, and then put the meat and onions into the kettle. Cover with boiling water. Simmer from two to three hours, or till the meat is tender. Half an hour before serving remove the fat and bones and add the other vegetables. Pare the potatoes, cut them into quarters, parboil them five minutes, and put them into the stew. Cook twenty minutes. When ready to serve, skim out the meat and potatoes, put them on a dish, thicken the gravy if needed, add more seasoning, and one half cup of strained tomato if desired. Pour the gravy over the meat.

RECIPE, No. 154. DUMPLINGS

1 pt. flour.	2 tsp. baking-powder. ,
$\frac{1}{2}$ tsp. salt.	1 scant c. milk.

Mix the dry ingredients and stir in the milk gradually to make a soft dough. Drop quickly by the spoonful into the boiling stew, letting the dumplings rest on the meat and potatoes. Cover closely to keep in the steam, and cook just ten minutes, without lifting the cover. Serve at once.

RECIPE, No. 155. VEAL FRICASSEE

The ends of the ribs, the breast, the neck, and the smaller part of the knuckle may be utilized in a stew or fricassee.

Cut the meat, two pounds, in small pieces and remove all the fine crumbly bones. Dredge with flour and brown it in dripping or salt pork fat. Cover the meat with boiling

water, skim as it begins to boil, and add two small onions, one teaspoon salt, and one half teaspoon pepper. Simmer until tender. Remove the larger bones; add a flour thickening and more seasoning if necessary. Cook ten minutes; add one half cup of milk and two tablespoons of butter.

Potatoes and dumplings may be cooked with the veal if a stew be desired.

RECIPE, No. 156. VEAL CUTLETS

Use slices from rump, loin, or ribs; remove bones, tendons, and skin; cover them with cold water and stew for the gravy. Cook veal fat in the spider until brown and crisp; pound and shape meat into pieces for serving; cover them with fine stale bread crumbs, then with beaten eggs, again with the crumbs, and brown them in the hot fat, adding salt pork fat if own fat is not sufficient; then cook more slowly until done, with no trace of pink color, for veal should never be rare. Remove meat and crisp fat; add dry flour to the hot fat and stir until brown, adding gradually the boiling water from the bones. Season with salt, pepper, and lemon if you like, and serve as gravy. If lean meat from the leg or some tough part, has been used, put it into a stewpan when browned, and pour gravy over it and let it simmer for half an hour.

Questions on Lessons VIII and IX

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|--|--|
| What is the most economical way of cooking meat? | What kinds of meat are suitable for a stew? |
| What is stewing? | What is a haricot; a ragout; a salmi; a chowder; a fricassee; a pot pie? |
| How do we prepare the meat for stewing? | What besides meat do we put into a stew? |
| What parts of meat are to be put into boiling water? | What are dumplings, and how do you make them? |
| What into cold water, and why? | What are the important points to remember in cooking dumplings? |
| Can a stew be made of cold steak or roast beef? | |
| How may we make tough meat tender before stewing it? | |

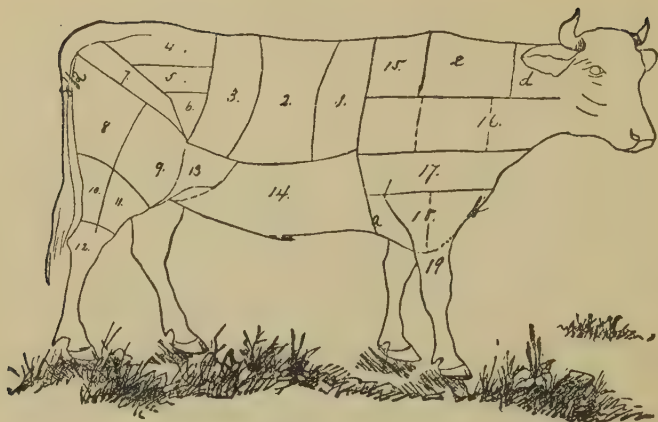


Diagram of Ox.

- | | |
|---------------------------|--------------------------------|
| 1. Tip of Sirloin. | 12. Shin. |
| 2. Middle of Sirloin. | 13. Boneless Flank. |
| 3. First Cut of Sirloin. | 14. Thick Flank with Bone. |
| 4. Back of Rump. | 15. First Cut of Ribs. |
| 5. Middle of Rump. | c. Chuck Ribs. |
| 6. Face of Rump. | d. Neck. |
| 7. Aitch Bone. | 16. Rattle Rand. |
| 8. Lower Part of Round. | 17. Second Cut of Rattle Rand. |
| 8½. Top of Round. | 18. Brisket (a. the navel end; |
| 9. Vein. | b. the butt end). |
| 10. Poorer Part of Round. | 19. Fore Shin. |
| 11. Poorer Part of Vein. | |



A. Hind quarter of Beef. 1, 2, 3, 4, 5, 6, Round of Beef.
7, 8, 9, Rump. 10, 11, 12, Sirloin. 13, 14, Flank.

1. Shin. Suitable to be used for soups and stock.

2. Lower or poorer part of the round, used for stews, etc.

3. Upper and best part of the round, used for steak and beef tea.

Top of round. The best round steak as far as the ridge of fat.

4. Lower or poorer part of vein, used for stews, chopping, braising.

5. Upper and best part of vein, used for boiling, steak, beef tea, spiced beef, etc.

6. Aitchbone, used for roast, stew, and stock.

7. Face of rump, used for a roast or steaks.

8. Middle of rump, used for steak.

9. Back of rump, used for roasts or steaks.

These steaks may be cut with the grain, or across the grain, of the meat. The cross-cut steaks are much the best.

10. First cut of sirloin, used for a roast or steaks. It contains tenderloin.

11. Second cut of sirloin, used for roasts or steaks; it contains tenderloin.

12. Tip of sirloin, used for roast or short steaks. Contains no tenderloin.

13. Thick end of flank. Used for corning, rolling, boiling.

14. Thin end of flank. Used for corning, rolling, boiling.

B.

B. Fore quarter of Beef. 1, 2, 3, Back-half. 4, 5, 6, 7, 8, 9, 10, Rattle rand.

- | | |
|---|---|
| 1. First five ribs or prime ribs. Five-rib cut. Used for roasts and steaks. | 6. Shin, used for soups and soup stock. |
| 2. Five chuck ribs. Poorer roasts and steaks. | 7. First strip rattle rand, used for corning. |
| 3. Neck, used for beef tea, stews, boiling, etc. | 8. Middle strip of rattle rand, used for corning. |
| 4. Sticking piece, used for corning. | 9. Butt end of brisket, used for corning. |
| 5. Shoulder, used for steaks, corning, etc. | 10. Navel end of brisket, used for corning. |

LESSON X

MEAT

Meat is a general term applied to the flesh of animals used for food. It includes the muscular flesh, sinews, fat, heart, liver, stomach, brains, and tongue, and is divided into three classes:—

Meat proper, including beef, veal, mutton, lamb, and pork;

Poultry, including chicken, turkey, geese, and ducks, or all domestic fowls;

Game, including partridges, grouse, pigeons, quail, and other birds, squirrels, rabbits, venison, and any wild meat that is hunted in the forest or field.

All meat should be removed from the paper in which it is wrapped as soon as it comes from the market, or the paper will absorb the juices, and the meat will taste of the paper.

Examine a piece of meat. First wipe it all over with a clean, damp cloth, to cleanse it; but it should never be put into water, as this draws out the juices.

We find large masses of red flesh or muscle, made up of little bundles of thread-like fibres or tubes separated by white membranes, and the large masses separated by cellular tissue. These fibres seem full of a red, watery juice. There is fat on the edge, or inner skin, also between the fibres, and large masses of it are between the muscles and in the hollow bones. We find a small amount of bone; a hard, white, gelatinous substance around the joints, called gristle; and white, shiny, tough membranes or tendons at the ends of the muscles.

These masses of fibre we call the lean meat. In one

part the fibres seem coarse and flabby, separate easily, and have thin membranes connecting them. These membranes are called connective tissue. If we press the meat we find only a little juice. In another section the fibres are smaller, finer, very close together, and feel hard and firm. We cannot separate them, there is so much of the connective tissue; but there is a large quantity of juice. In still another piece we find soft, tender fibre with little membrane and juice.

Good beef should be bright-red when first cut, well marbled with yellowish fat, and with a thick outside layer of fat. The flesh must be firm, and when pressed with the finger no mark should be left. The inner fat or suet should be dry and crumble easily.

The best mutton is that from a large, heavy animal, should have an abundance of hard, clear-white fat, and the flesh should be fine-grained and bright-red. Poor mutton has but little fat and little flesh as compared with the bone.

More depends upon the quality of the meat than upon its location in the creature. A slice from the sirloin in a poorly fed creature may not be so rich in flavor and nutriment as one from the flank in a well-fed animal.

The muscles that are used most are the toughest, but they contain the largest amount of juice, for the blood circulates most freely through them. The heart is a muscle used more than any other and has a tough, close, compact fibre.

The legs have large, thick muscles which start near the lower end, among a mass of tendons and cords, and grow larger, thicker, and more tender, till at the upper end they are very thick. Here is where we shall find the largest amount of lean meat with only the small, round leg bones. The upper part of the leg is called the round and the lower end the shin.

On the thighs, or rump, there are large, broad bones, with large muscles, branching out in several directions, which are tender and juicy. The muscles on the upper part of the fore leg are smaller and not so tender as those on the round.

Where the fore leg joins the shoulder and down the back, we find the shoulder blade — a broad, flat bone — and the backbone; also a number of small muscles running in all directions. We cannot expect to find much lean meat here; but we do find bone, gristle, and fat, with thin layers of meat between them.

Under the shoulder blade, and extending down the backbone to the loin, are the ribs, running at right angles with the backbone, meeting at the breast and tapering off at the loin. These bones are covered with a thick muscle near the back, and with many layers of muscle, fat, and tough membranes, extending round to the breast.

On the loin, and close to the backbone, there is a muscle which is not much used. It is merely a cushion over the bones; this is all tender and juicy, and is considered so choice that it has been named "Sir Loin."

Inside of the loin and under the short ribs is another muscle which is so little used that it is very soft and tender and has but little juice or flavor. This is called tenderloin.

On the flank or under part of the body there are no bones, but many thin, flabby muscles with large elastic membranes between them, so they can be stretched to a great size. They cross, lap over, and extend in many directions, and sometimes have large quantities of fat stored between and under them. These are plainly seen in corned beef.

The ends of the legs and the large joints have gristle and tendon like the drum stick of a chicken, which contain gelatine, — a substance which softens in cold water and then dissolves by long, slow cooking in hot water. But when cooked by dry heat it becomes hard.

Thus you see that in an animal there is a great amount of bone and fat, and only a small portion of choice, tender, juicy, lean meat. The thick, lean, tender portions on the rump and loin are the choice and expensive parts. These are best when cooked quickly, by intense heat, as in roasting and broiling; they have so much juice and such tender fibre, that they do not need the solvent agency of water.

But the tougher, cheaper parts of lean meat are very juicy, and when properly cooked afford a large amount

of nutriment. The bones contain protein and mineral matter, a part of which can be dissolved by proper cooking; the fat is rich in heat-giving material; and the gelatinous portions are useful.

The juices of meat contain many substances which are valuable as food, and savory principles called extractives which give flavor to the meat and cause it to differ in different animals.

In salting meat this juice is drawn out into the brine, and although there is some nutriment in the fat and fibre of salt meat, it is less nutritious than fresh meat.

It is therefore important, as a matter of economy and health, that we learn how to cook all parts of meat so as to obtain the greatest amount of nutriment, and develop the flavors which make it more palatable.

Questions on Meat

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|--|--|
| What is meat? | What part of the creature is the round? |
| How many varieties of meat can you mention? | Which is the most nourishing, — the tenderloin or the shin? |
| What is the first thing to do when meat comes from the market? | Which costs most, — the rump or neck? |
| How should it be cleansed? | How should meat that contains bone and gelatine be cooked? |
| Does every part of meat contain nutriment? | Which portions of meat are best cooked by quick, intense heat? |
| How would you select good beef? | |
| Where would you find the most juicy meat? | |
| In what parts would you find the least bone? | |

LESSON XI

SOUPS

Nearly all parts of an animal may be used as food, but from some parts we can obtain the nutriment in only one way. These are the bones and the gristle, tendons, and other gelatinous portions, some kinds of fat, and the lean meat which is tough and coarse in texture, or difficult to separate from the gristle and sinews imbedded in it. Many people consider these portions undesirable and dealers often have to dispose of them as refuse. But when cooked slowly in water at a moderate heat a large part of their nutriment is dissolved in the water, and may be used in this liquid form. The bony portions in roasted or baked meat are deemed even more undesirable, and are often thrown away as unfit for food. But even if previously cooked, some nutriment may be obtained from them, and they should always be saved and used in soups, if only for their flavor.

It is better to cook a large quantity at a time, as considerable time is required to extract all the nutriment; and the broth, when obtained, may be kept a week or more.

This liquid in which the meat has been cooked is used in making soup; and because it can be stored or kept on hand and drawn upon when needed, it is called *stock*.

In making soup our object is to draw the nutriment from the meat and bones into the water. Cut the meat into small pieces, and soak in cold water before heating, to soften and loosen the fibres and extract all the nutriment possible. Careless cooks soak the meat to cleanse it and then throw the water away. Meat should be cleansed by wiping with a damp cloth.

Use all kinds of meat, — beef, veal, mutton, or poultry,

— either together or separately. As each kind of meat has its distinctive flavor, a greater variety of soups may be made by using them separately. A good soup may be made from a mixture of all the bones and fragments of meat which one may happen to have. But to make the most nutritious and palatable soup both cooked and uncooked meats are needed; also bone, gelatine, fat, and a variety of seasoning material.

The salts found in the blood and juices of uncooked flesh are valuable as food; therefore a small portion of raw, lean meat is essential in making soup. Browned or roasted meat improves the flavor of the broth, because in such meats the flavor has been more highly developed. The marrow found in the shin bone, and the browned fat of cooked meats, give a fine flavor; and portions containing gelatine afford a certain amount of nutriment, and by hardening like jelly when the stock is cold, it keeps longer than if it were in a liquid form. Vegetables which have been cut fine, sweet herbs, and spices, are used to season and flavor the stock.

When the juices are drawn out and the water is red, draw the kettle forward where the water will almost boil, — just bubble on one side of the kettle. This gentle heat, continued steadily and for a long time, will dissolve the gelatinous portions. The water must bubble slightly, for if the temperature be allowed to fall too low the soup will sour.

The kettle should be covered closely to keep in the steam and the savory odors which would be wasted by evaporation if it were uncovered. It is wasteful to skim soup-stock. The scum that rises as the water heats contains some of the very substances which are desired in the water. They increase the flavor of the stock and should be retained. After a time they settle as sediment, and all the sediment that is fine enough to go through the strainer should be used. In clear soups it may be removed, but clear soups are not the most nutritious.

After simmering several hours, or until the bones are clean and the meat is in shreds, strain the stock, and throw away the scraps. This worthless residue of muscular

fibre and bones is dry, tasteless, and useless as food. When the fibrin from meat is desired it is better to cook the meat in other ways, as in stews, which are often miscalled soups. Soup should not be considered a complete food but only as one of a variety of foods, — a stimulant to prepare the stomach for the heavier food.

The stock will keep better if the fat be retained, as when cold it forms an air-tight covering. As the fat is more easily removed when cold, make the stock the day before it is needed, and strain it into several small jars, that the amount required may be used without disturbing the remainder.

When ready to use this stock for soup, take off all the fat, and save it for clarifying. Heat the stock to the boiling-point, and serve it alone, or put with it any vegetable, rice, macaroni, barley, or tapioca, which has been previously cooked till tender.

RECIPE, No. 157. A GENERAL RECIPE FOR STOCK

Equal parts by weight of meat and bone, and one quart of water to every pound of meat and bone. Where there is more bone than meat, or only cooked meat, water enough to cover is a correct proportion. For every quart of water use

1 tsp. salt.	1 tsp. mixed sweet herbs.
4 peppercorns.	2 tbsps. each vegetable cut fine.
4 whole cloves.	

If allspice, mace, and celery seed be used, less of each spice will be required. The herbs are whole thyme, marjoram, summer savory, and bay leaves. Strip off the leaves and blossoms, break the small stalks in tiny pieces, mix them, and keep them in a tin box. Use a teaspoon of the mixture, not of each herb. The vegetables generally used are onion, carrot, turnip, celery, and parsley. If you have only two kinds, use more of each. They only give additional flavor to the broth. When it is desired to eat them with the soup, cook them separately, and add to the soup just before serving.

There are soups in which parts of the meat are served

with the broth. These are made from chicken, veal, ox-tails, and calf's head. The meat is not cut as small as when it is to be used for stock. As soon as it is tender, it is removed and added to the strained stock just before serving. Soups made from light meats, veal and chicken, and from fish, are often made richer by the addition of eggs, or thickened with white sauce.

RECIPE, No. 158. CONDENSED RECIPE FOR SOUP STOCK

2 lbs. hind shin of beef.	2 tsp. salt.
2 qts. cold water.	1 small onion.
6 whole cloves.	$\frac{1}{2}$ " carrot.
6 peppercorns.	$\frac{1}{2}$ " turnip.
1 bunch of sweet herbs.	1 sprig parsley.
$\frac{1}{2}$ inch blade mace.	

Wipe and cut the bones and meat into small pieces. Put the marrow, bones, and cold water into the kettle. Soak one half hour before heating. Add spices, herbs, and the vegetables cut fine. Simmer six or seven hours and strain. When needed for soup remove the fat; heat the stock to the boiling-point; and season to taste.

LESSON XII

REVIEW OF SOUPS

RECIPE, No. 159. MACARONI SOUP

1 c. stock.	$\frac{1}{2}$ tsp. salt.
$\frac{1}{2}$ stick macaroni.	1 spk. pepper.

Cook the macaroni in boiling salted water about one half hour, or until tender. Drain and cut into thin slices or rings; put them into the soup tureen with the salt and pepper and pour the boiling stock over them.

RECIPE, No. 160. MIXED VEGETABLE SOUP

1 c. stock.	2 tbsp. turnip.
2 tbsp. carrot.	$\frac{1}{4}$ tsp. salt.

Wash and scrape the carrot and pare the turnip. Cut into quarter-inch dice. Put into boiling, salted water and cook until tender. Drain and add, with the salt, to the boiling stock.

Questions on Soups

What is the most economical way to use the bones and tough parts of meat?	Is it enough to put the kettle on the stove, and leave the broth to simmer or not as the case may be?
What is stock?	Why do we cover the kettle?
Why do we use cold water in starting stock?	What is the scum?
Why is it better to soak the meat before heating it?	What shall we do with the residue?
Should we leave the meat whole?	Is soup a complete food?
What is the advantage of using a portion of uncooked meat?	How does fat help to keep the stock?
May we also use any fragments of cooked meat?	What is a general rule for stock?
	What is thyme? marjoram?

LESSON XIII

BATTERS

Batters are thin mixtures of flour and liquid made in the proportion of one scant measure of liquid to one full measure of flour. If merely mixed and cooked slowly they would be hard and compact. But they are made light by the admixture of air or gas and by quick cooking before the air or gas has a chance to escape.

Air at 70° Fah. expands to about three times its volume when exposed to the temperature of a hot oven. So, as the mixture heats in cooking, the expansion of the air in the batter makes it light and porous.

Air is infolded in batters by beating the mixture thoroughly, as in whole-wheat gems; by beating air into eggs, and using the beaten eggs in the mixture, as in popovers; and by the gas obtained by the union of an acid with an alkaline carbonate, as in the use of baking-powder in the griddle cakes.

As it is important that batters be baked at once before the gas escapes, it is always well to see that the fire is in the proper condition, and to have the pans and ingredients ready before beginning to put the materials together, that there may be no needless delay. The general rule for mixing all batters is to mix the salt and baking-powder (if that is to be used) with the flour, beat the eggs, add half the liquid to the beaten eggs, and stir this gradually into the flour; then add the remainder of the liquid, beat all thoroughly, and bake quickly. When the expression "beat the eggs separately" occurs in a recipe it means beat the yolks and whites separately.

This lesson illustrates two of the ways of mixing, namely,

stirring and beating. Also the simplest way of cooking in hot fat.

Stirring. Stir means simply to blend or mix two or more materials. In mixing dry materials, stir or move the spoon round and round in the material until well blended. In mixing dry materials with liquids, add the liquid gradually, and stir slowly at first to avoid spattering. Be sure that the bowl of the spoon — not the edge nor the tip merely — touches the bottom and sides of the bowl. This is mashing as well as stirring, and the mixture soon becomes a paste. When perfectly smooth, add more liquid until the desired consistency is obtained. We stir flour and water together for a thickening, and we stir flour and butter and milk for a sauce, but when air is needed in the mixture, we beat.

Beating. Tip the bowl slightly, and hold the spoon so that the edge scrapes the bowl, and bring it up through the mixture, and over with a long quick stroke to the opposite side; under and up through again, lifting the spoon out of the mass, cutting clear through, and scraping from the bottom at every stroke. We beat eggs, batters, and soft doughs. The albumin of the eggs and the gluten of the flour, owing to their glutinous properties, catch the air and hold it in the form of bubbles, something as we make soap bubbles by blowing air into soapy water. The faster we beat, and the more we bring the material up from the bowl into the air, the more bubbles we have; but one stirring motion will break them. So in any mixture where we wish to obtain all the air possible we must be careful to beat and not to stir.

Thin batters, like gems made without eggs and popovers, should be beaten vigorously just before baking. Batters require to be baked in a hot oven, but if it be too hot, the sudden expansion of the air bursts the bubbles and the mixture falls.

In cooking batters in iron or tin, grease the dishes to keep the mixture from sticking. The fat on the dish heats quickly, and so helps to cook the outside of the mixture. This heat gives a flavor and texture to the crust different from those of the inside. The greater heat of the fat on the hot griddle gives a crust different from that obtained by baking

in the oven. There the under crust that comes in contact with the greased pan is unlike the top crust which had no fat in contact with it, and all these crusts are unlike that of the steamed pudding, because they have been subjected to greater heat. The brown color and the flavor of crusts are caused by the change of some of the starch into dextrine.

Cooking on a greased griddle is a two-sided baking, — first on one side, then turning and baking the other side. It is one form of cooking with hot fat, and from carelessness, too much fat is often used. It is called frying; but true frying is immersion in hot fat. It is really sautéing, because the cakes are turned over, but many prefer the word baking. A well-greased griddle or pan is one greased uniformly, — not a daub here and there, nor masses of grease in the corners, but just a thin coating of fat laid uniformly over the entire surface. Any more fat than enough to prevent the food from sticking is unnecessary, and is absorbed by the food, making it unwholesome. Very thin batters, or those containing eggs and sugar, require more fat than other kinds; but stiff doughs, like pastry and plain cookies, often need none.

RECIPE, No. 161. GRIDDLE CAKES

1 c. flour.	$\frac{1}{2}$ tsp. soda.
$\frac{1}{2}$ tsp. salt.	1 c. sour milk.
$\frac{1}{2}$ tsp. baking-powder.	2 tsp. melted butter.

Put the sour milk into a bowl. If one eighth of the liquid is sour cream, omit the butter. Turn in the sifted flour but do not mix. Lay a fine strainer over the flour and sift the soda, baking-powder, and salt through it, mixing it lightly into the dry flour. As the acid in the sour milk varies in amount the baking-powder is necessary. Stir until all the flour is moistened and the mixture begins to puff. If an egg is to be used, — and cakes are better with it, — add it unbeaten and beat until light and smooth. As both milk and flour vary in consistency, more of one or the other may be needed. The batter should be like thick cream as it is poured from the spoon. Rub the griddle all over with a thin bacon rind, leaving only a film of fat on the surface.

The surest way is to fry a spoonful and add more liquid if the batter be too thick to run easily on the griddle, and more flour if the cake spreads too much or will not hold its shape in turning. Pour the batter from the tip of a tablespoon, to make the cakes round; if poured from the side they may be irregular in shape. When one side is full of bubbles, turn the cakes over and brown the other side until it stops puffing. Half flour and half fine white corn meal, or whole wheat flour, may be used.

This method illustrates one of the short cuts in cooking. Here separate beating of the eggs is unnecessary on account of the gas from the soda.

RECIPE, No. 162. BUCKWHEAT CAKES

Mix overnight, two cups buckwheat, one cup Graham flour and one teaspoon salt. Stir in warm water for thick batter, two tablespoons molasses and one half cake compressed yeast dissolved in water. In the morning, stir the batter down; if too thick, thin with warm water, or if any sour odor, add one fourth teaspoon soda dissolved in water. Raise again and fry on greased griddle as wanted.

LESSON XIV

REVIEW OF BATTERS

RECIPE, No. 163. WHOLE-WHEAT OR GRAHAM GEMS

$\frac{1}{2}$ c. Graham flour.
 $\frac{1}{4}$ tsp. salt.

$\frac{1}{2}$ c. milk or water.

Mix salt with flour, add liquid gradually till smooth. Beat thoroughly. Drop by spoonfuls on a hot, well-greased griddle, or bake in hissing hot, buttered gem-pans, thirty minutes.

RECIPE, No. 164. POPOVERS

1 c. flour.
 $\frac{1}{2}$ tsp. salt.

1 c. milk.
1 egg.

Mix the salt with the flour, add half of the milk slowly, and when a smooth paste is formed, add the remainder and the egg beaten thoroughly. Beat well before filling the pans. Cook in hot, buttered gem-pans, or earthen cups, in a hot oven half an hour, or until the puffs are brown and well popped over.

They should rise well before browning, and remain in the oven until the crust is well cooked, otherwise they will settle and the crusts will stick together. A popover should be hollow and nearly dry inside.

Questions on Batters

What are batters?

Why should batters be light and porous?

How does air make a batter light?

How are popovers made light?

What do we use in the griddle cakes to make them rise?

Why should batters be cooked soon after they are mixed?

What is the proportion of flour and liquid for a batter?

- What is the difference between stirring and beating?
How do you mix a batter?
When do we stir, and when do we beat, a mixture?
Why do we grease a dish in which a batter is to be cooked?
What causes the differences in crusts of anything cooked on a griddle, in the oven, and by steam?
How many kinds of griddle cakes may be made?
How could you vary the popovers?

LESSON XV

THICKER BATTERS OR DOUGHS TO BE DROPPED

There are several degrees of thickness in batters. Thin batters are about the consistency of thin cream; thick batters are like thick cream; still thicker batters are stiff enough to keep their shape when dropped from a spoon. Any batter is a "pour batter" until it is made so stiff that it breaks in the pouring and drops from the spoon. Then it is called a drop batter. So long as it is soft enough to be beaten it is a batter, but when a spoon can no longer be made to go through it easily, with a beating motion, it is a dough. Doughs may be of any thickness, from "just stiff enough to be shaped," or "as soft as can be handled easily," to those that are so stiff that they may be "rolled thin as a wafer." It is better to become familiar with the proper consistency of batters and doughs by learning these descriptions, than to trust to such phrases as these, — "stiff as pound cake," or "soft as ginger-bread," which one often hears.

Muffin mixtures are thicker than the batters of griddle cakes. The general proportion is one scant measure of liquid to two full measures of flour. The proportions will vary somewhat according to the thickness of the liquid — cream, milk, or water — and the thickening quality of the meal or flour.

This lesson shows another way of obtaining carbon dioxide gas to lighten batter, namely, by the union of soda with molasses. Sugar cane molasses (not syrup) contains acetic acid, and when it is mixed properly with soda, carbon dioxide gas is liberated, and the soda is neutralized.

Carbon dioxide gas may also be obtained by combining

soda with the lactic acid in sour milk. In using soda with any acid, care must be taken to use the correct proportion, so that no alkali may be left, as an excess of alkali hinders digestion.

As the amount of acid in sour milk varies, it is difficult to know how much soda to use. Sour milk is best when it sours quickly and becomes thick and solid. Then the proportion is one teaspoon of soda to one pint of milk. When the milk is so old that it becomes watery and separates, or has a mouldy scum on the surface it is unfit to use.

In winter, milk grows bitter before it sours, and often tastes sour but is not thick. Then it may be used as if it were sweet milk, with baking-powder, or in ginger-bread or brown bread where molasses completes the acidity.

Soda is sometimes dissolved in water, but as part of the gas escapes as soon as the soda is wet, a better way is to mix the soda with the flour, or other dry ingredients. Soda becomes lumpy in keeping, and should always be pulverized finely before it is measured; then sifted through a fine wire strainer, and thoroughly mixed with the flour. When liquid is added, the chemical action takes place in the dough, and none of the gas is lost, provided the mixture is cooked immediately.

Cream of tartar, made from the crystals which collect in wine casks, is the most convenient acid to use with soda, for it unites with soda only when heated, and the gas therefore is not all liberated until the mixture is in the oven. Unless pure cream of tartar is available it is safer to use a reliable baking-powder.

The proportion of soda and acids is as follows :

- 1 tsp. soda and $2\frac{1}{2}$ tsp. cream of tartar for 1 qt. of flour.
- 1 tsp. baking-powder for each cup of flour.
- 1 tsp. soda to 1 pt. of thick sour milk.
- $\frac{7}{8}$ tsp. soda to 1 c. of molasses for batters.
- $\frac{3}{8}$ tsp. soda to 1 c. of molasses for stiff doughs.

Molasses as it is made now, from corn instead of cane syrup requires slightly less than one teaspoon of soda for each cup.

In any recipe where soda is to be used with cream of tartar substitute baking-powder in the proportion of one teaspoon of baking-powder to each cup of flour or meal.

Where only a small amount of carbon dioxide gas is desired, it is safer to use baking-powder, as it is more accurately measured than fractions of a spoonful of soda and cream of tartar.

In preparing all batters and soft doughs, which are made light with soda and an acid, mix the dry ingredients in one bowl; then mix the liquids with the beaten eggs, stir this quickly into the dry mixture; add the butter, melted, and when these are mixed thoroughly, bake or fry immediately.

The combined amount of the old measurement of one level teaspoon of soda and two slightly rounded teaspoons of cream of tartar, and the fraction of cornstarch or rice flour which is a necessary ingredient of pure baking-powder, would be from four to five level teaspoons. This is the average amount for one quart of flour for biscuits, making the amount for one cup of flour a trifle more than one level teaspoon. Mixtures that are rich in butter require a trifle more, as it is harder for the gas to lift up a dough heavy with fat; and those that have eggs to help make them light, require slightly less than this proportion. Use always as little as will make the dough light, and as flours vary and baking-powders vary, the right amount must often be determined by experience. Too much baking-powder gives a salty taste, causes doughnuts to soak fat, and makes cake too porous.

GENERAL DIRECTIONS

Have the pans ready and greased, if necessary, the fire in good condition, and all the ingredients at hand before you begin to put together. By measuring dry things first, then the liquid, one cup will do for all, without washing. Beat the eggs in a small bowl and use some of the liquid (milk or water) to rinse the egg from the bowl. Measure accurately and use every grain of dry material and every drop of liquid. Scrape all the dough from the bowl, but never scrape the dough from the knife on the edge of the

pan. Put it into the spoon, and then from the spoon into the corner of the pan. Fill the mixing bowl with cold water if not ready to wash it immediately, but if an egg-beater be used, wipe it at once with a damp cloth and then with a dry one.

RECIPE, No. 165. CORN CAKE

1 c. flour.	2 tsp. baking powder.
$\frac{1}{2}$ c. fine yellow corn meal.	1 c. sweet milk; if sour milk
$\frac{1}{4}$ c. sugar.	be used, omit the cream of
$\frac{1}{2}$ tsp. salt.	tartar.
1 tsp. cream of tartar.	1 egg.
$\frac{1}{2}$ tsp. soda (mashed fine) or	2 tbsp. butter or dripping.

Mix the dry ingredients thoroughly in the order given. Add the milk with the egg (well beaten), and the melted butter last. Beat well and bake in muffin-pans, or a shallow pan in a hot oven about twenty minutes. This cake may be made without the egg, and when it is to be eaten with meat the egg is unnecessary; but when this is the most substantial part of the meal, the egg should be used.

RECIPE, No. 166. RYE MUFFINS

1 c. rye meal (sifted).	2 tsp. baking-powder.
1 c. white flour.	1 egg.
$\frac{1}{4}$ c. sugar.	1 c. milk.
$\frac{1}{2}$ tsp. salt.	

Mix the dry ingredients thoroughly. Beat the egg, add the milk, and stir quickly into the dry mixture. Bake in hot gem pans, twenty-five minutes.

RECIPE, No. 167. GINGERBREAD

$\frac{1}{2}$ c. molasses.	2 tbsp. dripping.
$\frac{1}{2}$ tbsp. ginger.	$\frac{1}{4}$ c. boiling water.
$\frac{1}{4}$ tsp. salt.	1 c. flour.
$\frac{1}{2}$ tsp. soda (scant).	

Sift the ginger, salt, and soda into the molasses; add the dripping softened, beat well, and add the boiling water and flour. Beat thoroughly and bake in a shallow pan in a hot oven about twenty minutes.

RECIPE, No. 168. DUTCH APPLE CAKE

Mix one pint of flour, one half teaspoon of salt and three teaspoons of baking-powder; rub in one fourth cup of butter; beat one egg and mix it with one scant cup of milk; then stir this into the dry mixture. The dough should be soft enough to spread half an inch thick on a shallow baking pan. Core, pare and cut four or five apples into eighths; lay them in parallel rows on top of the dough, the sharp edge down, and press enough to make the edge penetrate slightly. Sprinkle two tablespoons of sugar on the apple. Bake in a hot oven twenty or thirty minutes. Serve it hot with butter, as a tea cake, or with lemon sauce as a pudding.

RECIPE, No. 169. HERMITS

One cup each of molasses, butter, sugar and sweet or sour milk, one teaspoon each of soda and cinnamon, and one half teaspoon each of salt and clove, and a dash of nutmeg. Flour to make a drop batter, and one half pound of raisins seeded and chopped or quartered.

Mix the spices and soda with one cup of flour, and flour the raisins. Heat the molasses enough to melt the butter, add the sugar and milk, then the flour mixture and enough more to make a drop batter, then the raisins. Spread the dough on a buttered pan about one fourth inch thick, bake quickly, and while warm cut into oblongs.

These are rich and delicious and much more delicate than when made with eggs and a stiffer dough. They are better when freshly baked.

Questions on Thick Batters

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| What is the consistency of a thin batter? | and liquid in muffin mixtures? |
| What are some of the terms used to designate the thickness of batters? | In how many ways may we use soda in cooking and obtain carbon dioxide? |
| What is the proportion of flour | How much soda should be |

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| used with one pint of sour milk? | Why should soda be finely pulverized? |
| How much with one teaspoon of cream of tartar? | What is cooking soda? |
| How much with one cup of molasses? | What is cream of tartar? |
| Why is it better to mix the soda with the flour rather than to dissolve it? | What should be the proportion of baking-powder to one cup of flour? |

LESSON XVI

DOUGHS TO BE ROLLED

Soft doughs which are to be cut into shapes should be mixed as soft as can be handled easily, then tossed out lightly on the floured board until they are well floured, patted with the rolling-pin until half an inch thick, then cut with a floured, sharp-edged cutter.

Stiff doughs, which are to be rolled very thin, such as wafers and cookies, require about four measures of flour to one of liquid. Roll a small portion at a time, with a light, quick stroke, not bearing down hard enough to make the dough stick. Cut the shapes close together and put the scraps with another portion, knead them slightly, to make a smooth mass, then roll again. In rolling any soft dough, use enough flour to prevent sticking, but no more; and be sure that the dough does not stick. Should it stick to the board scrape it off at once before adding more flour.

Flour the roller, and keep that and the board free from lumps of dough. Much time may be saved by dropping soft doughs from a teaspoon and allowing them to shape themselves in baking.

RECIPE, No. 170. SOFT MOLASSES COOKIES

$\frac{1}{2}$ c. molasses.
 $\frac{1}{2}$ tsp. salt.
 $\frac{1}{2}$ tbsp. ginger.
 $\frac{1}{2}$ tsp. soda.

1 tbsp. warm water.
 $\frac{1}{4}$ c. dripping, softened.
Flour to mix soft enough
to be rolled.

Roll out one third inch thick, cut with a small round cutter, and bake about ten minutes. Handle as little as possible and do not use much flour.

If corn syrup is used, slightly less soda will be required.

These may be made into balls, and placed some distance apart on a greased tin, then flattened with the bottom of a round tin box.

RECIPE, No. 171. WHEAT CRISPS

$\frac{1}{4}$ c. cream.

1 tbsp. sugar.

spk. salt.

$\frac{1}{2}$ c. fine granulated wheat
flour, or enough to make
a stiff dough.

Mix quite stiff, knead well, roll out thin as a wafer, cut with a small round cutter, and bake on ungreased tins in a very hot oven.

LESSON XVII

FRYING DOUGHS

Frying is cooking in deep hot fat. To be done properly there should be fat enough to float the articles to be cooked, or in some instances to cover them. Lard and dripping may be used, and as they often contain water they should be heated until all the water is evaporated. So long as there is water in fat it can be made no hotter than boiling water, and it will bubble and sputter until the water has all evaporated. It is useless to attempt to cook anything in fat until all bubbling and sputtering have ceased. Clear fat may be made very hot, but for cooking purposes it is never boiling hot, as some recipes indicate, as it would burn before it reached that point. When it smokes in the center as well as on the edge it is about 385° Fah. and is hot enough for the quickest kind of frying.

Fat may also be tested with a piece of bread. If it browns in forty counts the fat is the right temperature for any food which has been previously cooked, as croquettes; if it browns the bread in sixty counts it is right for any uncooked mixture.

For flour mixtures like doughnuts it is better to test the heat with a bit of the mixture. It should rise at once to the surface, swell, and begin to brown on the under side. The hot fat hardens the gluten in the dough, and forms a crust through which the fat cannot penetrate; but if the fat be not hot enough, the dough will soak the fat and the cakes will be greasy.

If too great a proportion of soda be used, more than can be neutralized, doughnuts will soak the fat. It is not extravagant to use eggs in doughnuts, as the albumin in the

eggs hardens quickly, and helps to keep out the fat, and thus makes them more wholesome.

Drop cakes, or fried muffins, are mixed soft, and dropped from a spoon into the fat, and shape themselves in cooking. They will also turn over when half done. Doughnuts are mixed stiff, rolled and cut into different shapes, and must be turned over in the fat.

After every frying, as soon as the fat is slightly cooled, strain it through a fine cloth into a pail. Never set it away to harden in the frying kettle without straining it, for the flour or crumbs which settle on the bottom will burn easily when it is heated again, and will adhere to anything that may be fried in it.

RECIPE, No. 172. FRIED RYE MUFFINS

$\frac{3}{4}$ c. rye meal.	$\frac{1}{4}$ tsp. salt.
$\frac{3}{4}$ c. flour.	1 egg.
2 tsp. baking powder.	$\frac{1}{2}$ c. milk.
1 tbsp. sugar.	

Mix the dry ingredients thoroughly, beat the egg, add the milk, stir this into the dry mixture. Take up one half tablespoon on the end of a spoon, and with a knife scrape it into the hot fat. When browned try them with a fork; if the dough does not stick they are done.

RECIPE, No. 173. DOUGHNUTS

1 pt. flour.	$\frac{1}{8}$ tsp. cinnamon.
$\frac{1}{4}$ c. sugar.	$\frac{1}{2}$ to $\frac{3}{4}$ c. milk.
$\frac{1}{2}$ tsp. salt.	1 egg.
2 tsp. baking powder.	1 tsp. butter (melted).

Mix in the order given; add one half cup of milk to the beaten egg, and use enough more milk to make the dough as soft as can be handled. Take a small portion at a time, roll out one third inch thick, and cut with a ring cutter. Put the scraps with another portion and roll again. When all are rolled, fry in deep hot fat. Turn when brown, and when done drain on paper or in a colander.

RECIPE, No. 174. FRITTERS

Make a batter with the beaten yolk of one egg, one fourth cup milk, one half teaspoon salt, and one half teaspoon sugar, and flour to make almost a drop batter. Let it stand twenty minutes, add beaten white, and more flour if needed. It is better to make it too stiff at first, for the fruit juices or other liquids thin it more or less.

Dip any large portion of fruit or cooked vegetable, or meat, or tripe, into the batter and when coated drop it into hot deep fat. Any small or chopped portions may be stirred in and dropped from a teaspoon.

LESSON XVIII

REVIEW OF DOUGHS

RECIPE, No. 175. YEAST

1 large potato.	1½ tsp. sugar.
1 tbsp. hops (loose).	1½ tsp. salt.
1 pt. boiling water.	¼ tsp. ginger.
1½ tbsp. flour.	½ yeast cake or ½ c. yeast.

Wash, pare, and soak the potato. Steep the hops in the water. Mix the flour, sugar, ginger, and salt in a large bowl. Grate the potato into the flour mixture. Let the hop water boil briskly for one minute, strain it over the potato, and mix quickly. If it does not thicken like starch place it over the fire for a few moments. If too thick add boiling water till thick as cream. When lukewarm or at 70° Fah. add the yeast. Raise in a warm place until frothy. Beat it down every half hour. Bottle and keep cool.

RECIPE, No. 176. SOUR MILK DOUGHNUTS

1½ c. sour milk.	1 tsp. soda.
½ c. thick sour cream.	1 tsp. salt.
1 c. powdered sugar.	¼ tsp. cinnamon, scant.
2 eggs.	6 to 8 c. flour.

Sift the flour into a pan, use six cups at first; add salt, soda and spice; beat eggs very light; add sour milk and cream; mix and then stir in the flour mixture; add enough more flour to make a dough that may be rolled. Mix well, roll one third inch thick, cut in rings and let them stand for an hour, or longer if you have time. Cover with bread cloth. Fry in hot fat, and when partly cool roll in powdered sugar.

Always use powdered sugar in the dough; in putting the doughnuts into the fat have the side that was on top for the

underside. This side has dried a little in rising and will be less liable to absorb fat, and the dough will rise better than if the dried side were on top.

Questions on Soft Doughs

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| What is the consistency of a thin batter? | Why is it better to mix the soda with the flour rather than to dissolve it? |
| What are some of the terms used to designate the thickness of batters? | Why should soda be finely pulverized? |
| What is the proportion of flour and liquid in muffin mixtures? | What is cooking soda? |
| In how many ways may we use soda in cooking and obtain carbon dioxide? | What is cream of tartar? |
| How much soda should be used with one pint of sour milk? | What should be the proportion of baking-powder to one cup of flour? |
| How much with one teaspoon of cream of tartar? | How would you roll soft doughs? |
| How much with one cup of molasses? | What is frying? |
| | What kinds of fat may be used? |
| | How may you tell when fat is hot enough for frying? |
| | Why should fried food be drained? |

LESSON XIX

BREAD

CHEMICAL COMPOSITION OF BREAD

	WATER	PROTEIN	FAT	CARBOHY- DRATES	ASH
Bread, White . . .	35.3	9.2	1.3	53.1	1.1
Crackers, Soda . .	5.9	9.8	9.1	73.1	2.1

Bread is a form of food made from the meal or flour of certain grains.

The word is derived from the verb "to bray or pound," expressive of the old method of preparing the grain. Bread is therefore made of something brayed, as brayed wheat or corn. The brayed grain is moistened and made into dough. Various substances are used to raise the dough, and the raised mass is stiffened by the heat in cooking, and thus held in shape, becomes a loaf.

Bread is made principally from wheat flour, because wheat is the only grain which contains the right proportion of gluten essential to the making of light, spongy bread. Rye used alone makes a moist, close, sticky bread. Corn meal alone makes too dry and crumbly a loaf, but either of these grains may be used to advantage with wheat.

The gluten of wheat is a tough, gray, elastic substance and will swell to four or five times its original bulk. Wheat also contains a large amount of starch and considerable mineral matter. When the whole of the nutritious part is used, wheat is the most useful food we have, but fine white flour contains only a part of the nutriment.

Bread is sometimes made by using soda and an acid to make the dough light; but these mixtures are usually baked in small forms, and called biscuit, or muffins. In all these

methods there is no chemical change in the flour, as the dough is simply made light by the gas from the soda.

But the perfect loaf of light spongy bread is made by the addition of something which produces fermentation and causes chemical changes in the flour.

Yeast is a minute form of plant life and when introduced into any substance which is rich in sugar, starch, or gluten, and exposed to air, warmth, and moisture, causes fermentation, which produces new compounds.

There are several kinds of fermentation, — lactic fermentation, which causes milk to sour; alcoholic fermentation, which is illustrated by the changes juices undergo in the making of wine, cider, and beer; acetic fermentation, which is caused by too prolonged alcoholic fermentation, as in making vinegar from cider.

Alcoholic fermentation produces carbon dioxide gas, which has no unpleasant taste and is, therefore, the kind of fermentation best suited for bread-making, the object being not to produce alcohol, but to puff up the dough and make the bread light.

Wheat flour contains starch and gluten, and a ferment called diastase, and if moistened and kept warm it would change in time or ferment; but when this change takes place slowly the dough will be sour. This change may be hastened by the addition of yeast.

Yeast, in its natural state, when viewed under the microscope, is found to be a plant of the fungus tribe, of which mould and mildew are familiar forms. It is one of the simplest and smallest forms of vegetable life, and is made up of cells which contain liquid or sap. These cells are found in fruit juices and sprouting grains, and they expand rapidly when exposed to air and moisture, and start the decomposition of the sugar in the grain or fruit.

To make yeast, grains which contain starch and gluten are moistened and left for the yeast cells to grow. Fermentation is checked after a time and the product is prepared in various ways for keeping and sold under the forms of dry, liquid, and compressed yeast.

The life of the yeast cells is not destroyed and they will

grow again when exposed to warmth and moisture, and supplied with food; the same as other forms of vegetable life, after being kept for a time, will grow when planted in proper soil.

The temperature of boiling water will kill the yeast plant, and so in using yeast, it is necessary to have the proper temperature.

In making bread, put the yeast into the flour; moisten it; keep it warm, and thus provide the food and conditions necessary to waken the yeast plant into life again. The yeast cells begin to grow in the dough, thus causing a change in the flour.

The diastase ferments and causes some of the starch to change into a kind of sugar, and the sugar changes into carbon dioxide gas and alcohol. In converting the starch into sugar in the dough, there is no change evident to the eye; but as soon as the sugar is changed to carbon dioxide gas and alcohol, large bubbles of gas appear. The gas, being lighter than the dough, rises, and in its efforts to escape, puffs up the gluten, and as the gluten is elastic it can stretch to several times its original bulk. It is on account of this peculiar tenacity or power of the wheat gluten to hold the gas that wheat flour makes the lightest bread. The gas fills the dough with minute air cells, which — should the yeast have been mixed uniformly with the flour — make it light and spongy. When this expansion has reached the desired limit, — that is, before the alcoholic fermentation has changed to the acetic and soured the dough, or the tough, glutinous walls of the air cells are broken, making large, unequal holes, — check the fermentation by baking the dough in a hot oven. The alcohol escapes into the oven; the starch is swollen and ruptured, and absorbs water. Some of the starch is changed to gum and forms the crust, which by the intense heat assumes a brown color.

In yeast bread the chemical change in some of the starch is similar to the change which takes place in starch during digestion, namely, its conversion into sugar. This gives a sweet, nutty flavor and a light, spongy texture, both different from those of soda bread. It is, when properly made and baked, usually considered the most wholesome form of bread.

LESSON XX

THE HEAT FOR BAKING

The heat of the oven for baking is a difficult matter for a beginner to determine. There are no fixed rules that can be followed strictly in every case. Testing the heat by a thermometer is not always practicable. Testing by the length of time one can bear the hand in the oven will vary with every hand that tries it. Much depends upon the construction of the stove, the condition of the fire, and the nature of the fuel. Learn to judge of the oven in this stove, but another may be different, and the same rules will not apply to both.

Experience is the best teacher, and by care in observing and comparing results, much may be learned. Study carefully your own stove, and remember which kinds of fuel give a quick, flashing fire, and which a steady, long-continued heat. Observe the amount of fuel needed to produce greater or less heat in the oven. Learn how to increase the heat quickly or gradually, or to diminish it as the case may require; also how to detect the difference between a fire that is bright red on top, but all ashes underneath, and one that is a solid bed of glowing coals. Test the oven by opening the door quickly, and notice how the heat puffs out into your face, or see how long you can keep your hand in the oven.

Compare the heat when there is a quick, blazing fire and all the draughts are open, with that when there is a large body of fire and the dampers are closed, and still again with that when there is but little fire. In this way make your own standard of a very hot, a hot, and a moderate oven.

The general rules are as follows :

Rolls, biscuit, breakfast-cakes, puff paste, game, and small pieces of meat, require a very hot oven, and quick baking, — half an hour or less. Have a bright fresh fire of clear glowing coals, all through.

Large pieces of meat and poultry require a very hot oven at first, but after five or ten minutes check the fire. Have sufficient body to the fire to last the required time without replenishing, or if that be impossible, add a little fuel often that the heat may be kept uniform.

Bread, pastry, and fish require a hot oven ;

Cakes, ginger-bread, and puddings, a moderate oven.

Flour mixtures and other things that have to rise in the oven, require heat from underneath to help in the rising, and should be placed on the bottom of the oven, with the rack underneath, if there be danger of burning. If the oven be too hot on the top they will brown before rising. A pan of water on the middle rack, or a paper hood over the pan, will prevent them from browning too fast.

Crease a piece of stiff paper on each end so that the edges will rest on the oven bottom, and the top of the paper will be at least an inch above the cake.

Meat requires more heat above than below, and should be placed on a rack in the pan, with another pan underneath to prevent burning the fat. In some stoves the heat may be turned away from the bottom of the oven. Small pieces of meat, scalloped dishes, and other things which require only a browning of the surface, may be placed on the rack near the top of the oven.

Until you have learned by experience how to regulate the fire and oven, it is better to look at things as they are baking, and turn and watch till you are sure they can be left without further care. But look for only an instant at a time. Cultivate the habit of opening and shutting the oven door quickly but gently.

RECIPE, No. 177. BREAD

1 c. water or milk (lukewarm).	$\frac{1}{4}$ c. yeast or $\frac{1}{8}$ yeast cake dis-
$\frac{1}{2}$ tsp. salt.	solved in $\frac{1}{4}$ c. water.
$\frac{1}{2}$ tsp. sugar.	3 to $3\frac{1}{2}$ c. flour.

Put the salt, sugar, and yeast into the mixing bowl, add the water, and when the sugar is dissolved add about three cups of the flour and mix with a knife. Add more flour till stiff enough to knead. Turn it out on a floured board, and knead until it is soft and elastic and can be worked without any flour. Put it back in the bowl, cover with a cloth and tin cover, and let it rise in a warm place (80° Fah.) till double its bulk (overnight in winter, three or four hours in summer). When light, work it over in the bowl, doubling it over from the edges to the center of the bowl until smooth. Let it rise again till double its bulk, then divide into two parts, shape into round or long loaves, or into biscuit. Once more let it rise, closely covered, till double its bulk. Bake in a hot oven (400° Fah. or 12 seconds by the hand).

One third white flour and two thirds brown flour may be used in the same way, but without kneading. Brown flour means any good flour prepared from the whole grain.

RECIPE, No. 178. GRAHAM OR WHEAT MEAL BREAD (No KNEADING)

Dissolve half a yeast cake in one fourth cup warm water, add one cup warm milk, half teaspoon salt, one teaspoon sugar, and white flour sufficient to make a batter that breaks when you pour it. Let this rise an hour, or until light, keeping the pan in a bowl of warm water, hot enough to bear the hand. Then stir in fine, granulated wheat, or sifted Graham meal, or entire wheat flour, until the dough will keep up round when you stop mixing.

Mix it with a knife until smooth, then raise again until double its bulk. Cut it down, turn out, and shape into a long, thin loaf with as little kneading as possible. Let it rise in the pan until double; then bake in a hot oven about forty minutes.

RECIPE, No. 179. MILK BREAD

When milk is used in making bread, scald the milk in a double boiler; then cool it until lukewarm, and proceed as directed for water bread.

TIME-TABLE

BAKING BREAD, CAKE, AND PUDDINGS

Loaf bread . . .	40 to 60 m.	Bread pudding . . .	1 hr.
Rolls, biscuit . . .	10 to 20 "	Rice and tapioca . . .	1 "
Graham gems . . .	30 "	Indian pudding . . .	2 to 3 "
Ginger-bread . . .	20 to 30 "	Plum " . . .	2 to 3 "
Sponge cake . . .	45 to 60 "	Custards, . . .	15 to 20 m.
Plain " . . .	30 to 40 "	Steamed brown bread .	3 hrs.
Fruit " . . .	2 to 3 hrs.	Steamed puddings .	1 to 3 "
Cookies	10 to 15 m.	Pie crust	about 30 m.

LESSON XXI

REVIEW OF BREAD

- | | |
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| What is the meaning of bread? | What happens if it should rise too long? |
| From what grains is bread made? | Why do we bake bread? |
| Why does wheat make the best bread? | What foods require to be baked in a very hot oven; a hot oven; a moderate oven? |
| What is gluten? | What kind of fire do we need for quick baking? |
| What is fermentation? | What for baking meat? |
| How is bread dough made light? | What for baking puddings? |
| How many kinds of fermentation? | What is pastry? |
| What is yeast? | How do you make plain pastry? |
| What conditions are necessary to enable yeast to grow in flour? | What would you do if anything baked too rapidly? |
| What change takes place in the flour when yeast is added to dough? | What are the objections to pastry as food? |
| How can we tell when dough is raised enough? | Can it be made in a wholesome manner? |

LESSON XXII

FISH

CHEMICAL COMPOSITION

FISH	WATER	PROTEIN	FAT	ASH
Salmon	51.2	14.6	9.5	0.9
Mackerel	43.7	11.4	3.5	.7
Bluefish	40.3	9.8	0.6	.7
Shad	39.6	10.3	5.4	.8
Herring	37.3	10.0	5.9	.8
Halibut	61.9	15.1	4.4	.9
Cod	58.5	10.6	0.2	.8
Haddock	40.0	8.2	0.2	.6
Whitefish	39.4	12.5	3.6	.9
Bass	40.1	11.5	1.3	.7
Flounder	35.8	6.3	0.3	.6
Salt Cod	40.3	16.0	0.4	1.2
Boneless Codfish	54.4	22.1	0.3	1.7

WATER	PROTEIN	FAT	ASH
Halibut	Boneless Cod	Salmon	{ Salmon
Cod	Salt Cod	Herring	{ Halibut
Boneless Cod	Halibut	Shad	{ Whitefish
Salmon	Salmon	Halibut	{ Shad
Mackerel	Whitefish	Whitefish	{ Herring
{ Bluefish	Bass	Mackerel	{ Cod
{ Salt Cod	Mackerel	Bass	{ Mackerel
Bass	Cod	Bluefish	{ Bluefish
Haddock	Shad	Salt Cod	{ Bass
Shad	Herring	{ Boneless Cod	{ Boneless Cod
Whitefish	Bluefish	{ Flounder	{ Haddock
Herring	Haddock	{ Cod	{ Flounder
Flounder	Flounder	{ Haddock	{ Salt Cod

Fish, on account of its abundance, cheapness, and wholesomeness, is invaluable as an article of food. It is pound for pound less nutritious and less stimulating than meat, but is

rich in phosphorus and has a large proportion of protein. The white varieties, like flounder, halibut, cod, and haddock, have the oil in the liver, and are the cheapest and most digestible. Red-blooded fish, like salmon, mackerel, and bluefish, have the oil distributed through the body, and the flesh is dark. The latter are nutritious for those who can digest them, but they are too rich and oily for invalids.

Fish should be as fresh as possible, otherwise it may prove poisonous, and if not thoroughly cooked it will be hard to digest. The flesh of good fresh fish is firm and hard; if not fresh it will be soft and flabby.

Fish, after being dressed at the market, should be cleaned by scraping, if necessary, and by wiping with a cloth wet in cold salted water. Do not sprinkle with salt until ready to cook the fish. As they are slippery to handle, dip the fingers into salt while dressing them.

Fish may be cooked in a variety of ways, but broiling and baking are the most wholesome methods. Small fish and pieces of large, white fish are good if fried, but oily fish should never be fried.

TIME-TABLE FOR BAKING

Fish, 6 to 8 lbs.; long, thin fish	1 h.
Fish, 4 to 6 lbs.; thick halibut	1 h.
Fish, small	20 to 30 m.

RECIPE, No. 180. BAKED FISH

Cod, haddock, bluefish, small salmon, bass, and shad, may be stuffed and baked whole.

Clean, wipe, and dry the fish, rub with salt, fill with stuffing, and sew the edges together. Cut gashes two inches apart on each side. Put narrow strips of fat salt pork into the gashes and in the pan under the fish. Place the fish upright in the pan by propping it up with potatoes, or by skewering the head one way and the tail the other. Dredge the fish with flour. Put it into a hot oven without water; when the flour is brown, baste with the pork fat, and baste often. It is done when the flesh separates easily from the bone. Remove

it carefully to a hot platter, draw out the strings or skewers, and serve with drawn butter or egg sauce.

Thick pieces of halibut or cod may be stuffed, or not, and baked in the same way. Fish may also be baked in milk enough to cover the bottom of the pan. When cooked in this way no pork or flour is needed. The milk keeps the fish moist, and makes it brown better. It is a good substitute for pork, especially for any dry, white fish.

RECIPE, NO. 181. STUFFING FOR BAKED FISH

Weighing from four to six pounds

1 c. cracker crumbs.	1 tsp. chopped parsley.
$\frac{1}{2}$ tsp. salt.	1 tsp. capers.
$\frac{1}{2}$ tsp. pepper.	1 tsp. pickles.
1 tsp. chopped onion.	$\frac{1}{4}$ c. melted butter.

This makes a dry, crumbly stuffing. If a moist stuffing be desired, moisten the crackers with cold water, or use stale (not dried) bread crumbs, and moisten with one beaten egg and the butter.

It is not necessary to have all the seasoning given in the recipe, but some acid, like pickles, lemon, or vinegar, is more agreeable than sweet herbs, in a stuffing for fish.

LESSON XXIII

BOILED FISH

TIME-TABLE FOR BOILING

Halibut and salmon in cubical form, per lb.	15 m.
Blue-fish, bass, etc., per lb.	10 m.
Cod, haddock, and small fish, per lb.	6 m.

RECIPE, No. 182. BOILED FISH

To boil, without breaking, fish should be of uniform thickness. A small salmon, or the middle cut of a large one, or the thickest part of cod or blue-fish, or a thick piece of halibut, should be selected for boiling.

The most economical way is to cook the fish in a steamer over boiling water. If that is not convenient, put the fish in a wire basket, or on a plate, and the plate in a square of cloth; when done lift cloth, plate, and fish together. Put the fish into boiling salted water, and let it simmer (not boil) till done. The time will vary with the shape of the fish. Boiled fish should be well drained and be served with a rich sauce.

RECIPE, No. 183. DRAWN-BUTTER SAUCE FOR FISH

1 pt. hot water or milk.	$\frac{1}{2}$ tsp. salt.
$\frac{1}{2}$ c. butter, scant.	$\frac{1}{4}$ tsp. pepper.
4 tbsp. flour.	

Put half the butter in a saucepan; be careful not to let it become brown; when melted add the dry flour, and mix well. Add the hot water, a little at a time, and stir rapidly as it thickens. When perfectly smooth add the remainder of the butter, one small piece at a time, and stir till it is absorbed.

Add the salt and pepper. When carefully made, this sauce should be free from lumps; but if not smooth, strain it before serving. Add two hard-cooked eggs chopped or sliced.

RECIPE, No. 184. FISH CHOWDER

4 or 5 lb. cod or haddock or bass.	1 tbsp. salt.
6 potatoes.	$\frac{1}{2}$ tsp. white pepper.
A 2-in. cube of fat salt pork.	2 tbsp. butter.
2 small onions.	1 qt. milk.
	6 butter crackers.

When buying the fish have the head and skin removed, and the flesh taken off in a long strip from each side of the backbone. Pick out all the fine bones and cut each half of the fish in four or five pieces.

Cook the fish bones and head half an hour, then strain the water. Cut the salt pork and onion into dice and fry until light brown. Slice the potatoes, scald them five minutes, pour off the water, add the strained pork fat, and the bone water. When boiling add the fish, simmer ten minutes, or until the potatoes are tender. Add the seasoning and one pint of the milk. Make a white sauce with the butter, two tablespoons of flour and the other pint of milk, and stir it in carefully. Serve with crackers.

Questions on Fish

Why is fish a valuable food?	What kinds of fish may be baked?
How does fish compare with meat?	Which are best broiled; fried; boiled?
How do the white varieties of fish differ from the dark or red-blooded fish?	How do you prepare fish for frying?
Which are better for invalids?	Why is it necessary to have the fat smoking hot?
What is the test for the freshness of fish?	How do you make a fish chowder?
How may salt cod be used?	

LESSON XXIV

EGGS

CHEMICAL COMPOSITION

WATER	PROTEIN	FAT	ASH
65.5	13.1	9.3	0.9

Some people consider it extravagant to use many eggs in cooking. It is extravagant to use them unnecessarily, that is, to use four in a place where one would answer the same purpose, as in muffins or corn cake, or to use them in the ways in which we get the least good from them, as in rich, heavy cake, or to use them freely in the season when they cost the most. But when the price is low, they may be used in any of the simple ways of boiling, poaching, etc., or in plain cake and custards and other wholesome combinations.

Eggs are nutritious and contain valuable food stuffs, being rich in protein and mineral matters, but are deficient in carbohydrates. These may be supplied by using bread, rice, milk or butter with them.

The shells of newly-laid eggs are almost full, but as the shells are porous, on exposure to the air the water inside evaporates, and the eggs grow lighter, while air entering in fills the place of the water, and causes the elements in the egg to change, and the eggs soon spoil. This explains why a good fresh egg is heavy and will sink in water, and why a stale egg is lighter, has a rattling or gurgling sound, and floats in the water.

Eggs should be kept in a cool dark place and carefully, as any jarring motion may rupture the membrane which separates the white from the yolk, and if they become mixed, the egg spoils quickly. Anything which will entirely exclude the air from the eggs will help to keep them.

PRESERVING EGGS

Dissolve one and one half quarts of water-glass in eighteen of boiled water. Stir until thoroughly dissolved. Water-glass is a chemical solution which may be procured at any drug-store and costs about twenty cents a quart. Provide two eight-gallon stone jars. These will hold thirty dozen eggs. Secure eggs that are perfectly clean and fresh; and laid in the spring. Do not wash them. Put the eggs in the liquid mixture and pack as closely as possible. Add them in small or large numbers until within two inches of the top of the liquid. Cover the jars to prevent evaporation and keep them in a cool place.

Do not take the eggs from the liquid until just before using. They will keep a long time, and if fresh when put in, will be fresh when used. They may be used in any way for cooking but should not be eaten as boiled, poached or "raw" eggs.

RECIPE, No. 185. OMELET

2 eggs.

 $\frac{1}{2}$ tsp. salt.

2 tbsp. milk.

 $\frac{1}{2}$ tsp. pepper.

Beat the yolks of the eggs till light-colored and creamy; add the milk, salt, and pepper. Beat the whites until they are stiff and dry. Cut and fold them lightly into the yolks until just covered. Have a clean smooth omelet pan or small spider. When hot, rub it round the edge with one teaspoon of butter on a broad knife; let the butter run all over the pan, and when bubbling turn in the omelet quickly and spread it evenly on the pan. Lift the pan from the hottest part of the fire and cook carefully, until slightly browned underneath. Put it on the oven grate to dry but not to brown on the top. When dry in the center run a knife round the edge, then under the half nearest the handle and fold over toward the right. Hold the edge of a hot platter against the lower edge of the pan, and invert the omelet upon the platter.

RECIPE, No. 186. EGG VERMICELLI

Separate the yolk from the white of hard-boiled eggs. Chop the white fine, and mix it with a little hot milk or thin white sauce. Season with salt and pepper, pour it on toast, and rub the yolk through a strainer over the top.

RECIPE, No. 187. MOCHA CUSTARD

Put one cup of strong, clear coffee and one pint of milk in the double boiler and let them scald. Beat the yolks of six eggs till light, add one half cup of sugar and one eighth teaspoon of salt, and when well mixed stir in the hot milk. Turn back into the double boiler and stir constantly until thick like cream. Cool quickly and stir frequently while cooling. Turn into frappé glasses, filling them three fourths full. Sweeten one cup of thick cream with powdered sugar, flavor with a few drops of vanilla, surround the bowl with ice water and whip it with an egg beater till thick. Heap it lightly on the custard and serve with cake made with the whites of the eggs.

Questions on Eggs

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|-------------------------------------|---|
| When is it extravagant to use eggs? | Why is a fresh egg heavier than a stale egg? |
| What should be eaten with eggs? | Does it injure eggs to handle them roughly even if the shell is not broken? |

LESSON XXV

CAKE MAKING AND BAKING

It is not advisable to give much time or attention to cake making in these lessons. There is little danger that this branch of cooking will be neglected; and gratifying as it would be to school girls generally, to make cake in every lesson, there are so many more important things to learn that this subject must be kept in the background.

There are really only two kinds of cake, — those with butter and those without. If the correct methods of mixing and the principles of baking are understood, any reliable recipe may be used successfully. The principles underlying the making of batters and doughs apply equally to cake making, but in the latter greater amounts of butter and sugar are used.

Butter cakes, or those made with butter, include all the varieties of cup-cake, pound cake, fruit-cake, and the like. There are two ways of mixing. First, soften the butter and rub it until creamy, add the sugar and beat thoroughly; beat the yolks until light-colored and thick; then beat them into sugar and butter. Mix the soda, cream of tartar, or baking-powder, and spice with the flour; add milk and flour alternately, beating well; add the whites beaten stiff. All butter cakes should be beaten, before being poured into the pan, until smooth and fine-grained. If fruit is used, flour it well to keep it from sticking and add with the flour.

The second and easier way of mixing plain cake is similar to that of mixing breakfast cakes. Put the flour in the mixing bowl, and sift and mix with it the soda, cream of tartar, or baking-powder and spice. Add the sugar and mix thoroughly. Beat the yolks, add the milk, and stir this into the

flour mixture. Then stir in the butter melted, and the stiffly beaten whites last, and beat all together vigorously, just before putting it into the pans.

Sponge Cakes. These are made without butter, and when quite rich contain only eggs, sugar, flavoring, and flour. A less expensive kind is made by using some liquid, usually water, and more flour, and substituting soda and cream of tartar or baking-powder for part of the eggs. In mixing, beat the yolks of the eggs until light and thick, add the sugar, flavoring, and water, then the flour mixed with the soda and cream of tartar or baking-powder, and lastly the beaten whites of the eggs. When only eggs, sugar, and flour are used, there must be vigorous beating of the yolks and sugar, and no beating at all after the whites and flour are added, — only a mixing of the ingredients.

Baking Cake. Do not attempt to make cake unless you can have entire control of the fire. It should be rather low, but sufficient to heat the oven moderately, and to last without replenishing through the entire baking. Thin cakes require a hotter oven than those baked in thick loaves. Cakes made with baking-powder or soda and cream of tartar should bake more quickly than pound cake or sponge cake made light with eggs alone. Cakes with molasses in them require a quick oven, but as they burn quickly they must be baked with care. Whichever kind you are baking, ascertain from the time-table the time required and divide it into quarters. Look at it quickly, within five minutes. During the first quarter of the time the cake should merely rise and not brown. If it brown before rising, the oven is too hot and must be cooled.

It should continue to rise on the edges during the second quarter and begin to brown in spots.

In the third quarter it should rise in the center and become all over a rich golden brown, and perhaps crack a little in the middle. If the dough boils up out of the crack the oven is too hot, and if it remains up too much flour has been used, for in the last quarter it should settle to a level, brown in the crack, and shrink from the pan.

During the first and second quarter the cake may be moved

carefully if necessary, but in the third quarter, or when it is fully risen but not stiffened by the heat, there is danger of its falling, if moved, or if the oven door is slammed. Protect it by a piece of stiff paper, creased on each end that the edges may rest on the oven bottom with the top an inch above the cake.

Cake is done when it shrinks from the pan and stops hissing, or when a straw inserted in the center comes out clean.

Loosen the edges of the cake with a knife and turn the pan over carefully upon a cloth laid over a bread cooler or sieve, leaving the cake top-side up.

RECIPE, No. 188. PLAIN CAKE

$\frac{1}{4}$ c. butter.	1 tsp. baking-powder.
1 c. sugar.	$1\frac{1}{2}$ c. flour.
2 eggs.	$\frac{1}{2}$ tsp. spice, or
$\frac{1}{2}$ c. milk.	$\frac{1}{2}$ tsp. flavoring.

See that the fire and oven are right and have all the ingredients at hand. Line the pans with buttered paper. Mix the baking-powder and spice with the flour. Separate the eggs. Measure the butter, rub it until creamy, add the sugar, and in scraping out the sugar take all the butter that has adhered to the cup. Beat until the sugar is dissolved; add the well-beaten yolks and the flavoring. Rinse out the yolk with the milk, then add milk and flour alternately, and the whites, beaten to a stiff froth, last. Beat well; bake in a shallow pan about twenty minutes, or until it shrinks from the pan.

Vary the cake by adding one half cup currants, or nuts chopped fine, or by coloring a part with dark spices or chocolate.

RECIPE, No. 189. WATER SPONGE CAKE

1 egg.	3 tbsp. cold water.
$\frac{1}{2}$ c. sugar.	$\frac{2}{3}$ c. flour.
$\frac{1}{2}$ tsp. lemon juice.	1 tsp. baking-powder.

Beat the yolk of the egg, add the sugar and beat again, add the lemon juice and water, then the flour in which the baking-powder has been mixed, and lastly the whites beaten stiff. Bake in a small shallow pan, or in scalloped tins.

RECIPE, No. 190. FROSTING

1 c. powdered sugar.

1 tbsp. boiling water.

1 tbsp. lemon juice
(not extract).

Mix well and add a few drops more of boiling water until it is thin enough to settle when you stop stirring.

A little melted chocolate may be used to give variety.

LESSON XXVI

LOBSTERS

Markets are now so well supplied with these delicious shell-fish that they may be obtained in good condition all the year. Lobsters are put alive into boiling salted water and cooked twenty minutes from the time the water boils. The shells are dark green when the lobsters are alive, but turn bright red when cooking.

Boiled lobsters should not be eaten until cold and should never be kept more than eighteen hours after boiling.

Select lobsters from one to two pounds in weight and well filled out with meat. Lobsters with thin shells and that rattle when shaken are generally watery, but those that are heavy in proportion to their size, and have hard, solid shells streaked with black will be found full of meat.

RECIPE, No. 191. TO PREPARE LOBSTER

After the lobster is boiled, and when it is cold enough to handle, wipe off all the scum which adheres to the shell, twist off the large claws, and if the shells are thin cut a strip from the sharp edge, using a strong, sharp knife; then break the shell apart and take the meat out whole. If it is too thick to be cut in this way, hold the claw on the edge of the table and break it with a mallet, being careful not to crush the meat. Pick the meat out from the joints. Twist off the small claws and lay them aside for garnishing. With a sort of sidewise twist, break the tail away from the body, thus avoiding any spattering or loss of the liver.

If the tail shell is to be used, cut through the inner portion and remove the meat, but if not needed for this purpose, lay

the tail on one side and crush in with your hand. This will snap the inner part of the shell and allow you to remove the meat easily. Lay the outer muscle back from the middle and take out the intestinal vein, which runs the whole length and terminates in a sack at the end. Sometimes it can be plainly seen by its dark color and sometimes it is almost invisible, but it is always there.

Now stand the body on its head, insert both thumbs into the opening with the right hand against the back shell and the left against the under side; pull it apart gently and leave the stomach in the right hand shell. Shake out all of the green liver and scrape out any of the thick white juice. On the sides of the body portion are the feathery gills or lungs, which should be carefully removed. Break the body through the middle and pick out all the meat which lies between the fine bones; it is the choicest morsel in the whole lobster. If there is any coral save it for garnishing. The only portions which are not edible are the stomach, lungs, and the intestinal vein. The bones may be washed and dried to use in baking the prepared meat, or they may be covered with cold water and boiled and the liquor used to give color and flavor to soup.

RECIPE, No. 192. PLAIN LOBSTER

Cut the meat into small pieces and mix the liver with it; dry the coral and rub it through a strainer over the meat. Serve with vinegar, melted butter, or with cold slaw dressing; or mash the liver to a smooth paste, season it with salt and pepper. Thin it with oil or melted butter and vinegar and pour it over the lobster.

RECIPE, No. 193. FRICASSEED OR CREAMED LOBSTER

Prepare the lobster and chop fine. For one cup of lobster put two tablespoons butter into a shallow frying pan; add the lobster, a dash of cayenne pepper and one fourth cup medium cream. Mix well as it heats; add two tablespoons vinegar and serve very hot. Vinegar will not curdle the cream, but do not use vinegar with milk.

RECIPE, No. 194. SALT FISH BALLS

1 c. potatoes.	$\frac{1}{2}$ egg.
$\frac{1}{2}$ c. salt fish.	spk. pepper.
1 tsp. butter.	Fat for frying.

Wash the fish and shred it into half-inch pieces. Pare the potatoes, and if large cut into quarters. Put the potatoes and fish in a stew-pan and cover with boiling water. Cook twenty-five minutes, or until potatoes are soft. Drain very dry, mash fine, add butter, seasoning, and beaten egg. Beat well, shape on a spoon, drop into smoking hot fat, fry till brown and drain on paper.

The same mixture may be cooked as hash.

LESSON XXVII

FOOD FOR INVALIDS

When we are well and strong, we need food to keep us so, and also to give us force or energy to do work.

When we work we wear out faster, and so need more food. We need a variety of food, — some kinds that are digested quickly and some that are digested slowly, for if everything we ate were changed at once we would be faint and hungry again very soon.

But when we are ill, sometimes we do not need any food for a time, as it is better for the system to have a period of complete rest or comparative inaction. At other times, we need only a small quantity of food, just enough to satisfy hunger; but that little must be food that can be digested easily, or that will reduce inflammation and quench thirst, but will not stimulate. Food in a liquid form is quickly absorbed into the system. Acid, aromatic and soothing drinks, oranges, grapes, and other fruits, gelatinous broths and jellies, and starchy gruels are useful at such times.

COOKING AND CARING FOR INVALIDS

In waiting upon invalids, several things are essential besides the careful preparation of their food, — perfect ventilation, cleanliness, quiet, and strict obedience to the physician's orders.

Have plenty of fresh air and sunshine, but be careful to shield the patient from a draught and any glaring light. Allow nothing in the room that will vitiate the air, — like decaying flowers, kerosene lamps burning low, and soiled clothing. Keep the bed, the patient, the room, and everything about yourself, absolutely clean. Avoid all noise,

whispering, loud talking, rustling, or any abrupt or suspicious movements. Admit no visitors except with the consent of the physician.

Anticipate the needs of the patient, but do not annoy by unnecessary attentions. When feeding the patient, do it gently and neatly. Serve food in small quantities, often, and in varied and tempting forms.

Serve hot, liquids ordered to be served hot, and avoid slopping. When the meal is over, remove every trace of food from the room.

RECIPE, No. 195. MILK PORRIDGE

$\frac{1}{4}$ c. raisins.
2 c. milk.

2 tbsp. flour.
 $\frac{1}{2}$ tsp. salt.

Boil the raisins in a little water twenty minutes. Let the water boil away and add the milk. When boiling, add the flour, rubbed to a thin paste with a little cold milk. Boil eight or ten minutes. Season with salt and strain before serving.

RECIPE, No. 196. OATMEAL GRUEL

Pound one half cup of coarse oatmeal till it is mealy. Put it in a tumbler with cold water. Stir well, let it settle, then pour off the mealy water into a saucepan. Fill again and pour off the water, and again repeat this, being careful each time not to disturb the sediment in the bottom of the tumbler. Then boil the water twenty minutes, stirring often. Add one half teaspoon salt. If too thick add a little cream or milk. Strain, and serve hot.

RECIPE, No. 197. TO PREPARE AN ORANGE FOR AN INVALID

Pare (not peel) around the orange, cutting in deep enough to cut off the inner, white membrane. Cut near the membrane of one of the sections straight in to the core; cut in again on the opposite edge. Slip the knife under and scoop out the pulp, but leave the membrane on the core. Lay the membrane back under the left thumb, and cut in the same

way into the next section. When all the pulp is removed the membrane should be left on the core. The pulp and juice are more delicious when taken out in this way than when squeezed out. Remove all the seeds, sweeten to taste, and serve with chipped ice, if desired.

RECIPE, No. 198. TO CHIP ICE

With a thimble on your finger press a large needle into a piece of ice, and chip it off into bits as large as a pea. Mix it with an equal quantity of acid jelly or fruit juice.

RECIPE, No. 199. APPLE WATER

1 apple.	1 c. boiling water.
2 tbsp. sugar.	1 strip lemon peel.

Wipe a large, sour apple, and cut it, without paring, into thin slices. Put them into a bowl with the lemon peel and boiling water; cover it, and let it stand until cold. Add the sugar, and when dissolved strain it.

RECIPE, No. 200. RHUBARB WATER

1 small stalk rhubarb.	1 strip lemon peel.
1 c. boiling water.	2 tbsp. sugar.

Wipe the rhubarb, cut into pieces an inch long. Add lemon peel and boiling water. Let it stand until cold. Add sugar, and when dissolved strain it.

RECIPE, No. 201. IRISH MOSS JELLY

$\frac{1}{2}$ c. Irish moss.	1 lemon or orange.
4 figs.	$\frac{1}{3}$ c. sugar.
1 pt. boiling water.	

Soak, pick over, and wash the moss. Put it into the boiling water, add the figs, and the thin rind of the lemon. Simmer until the moss is dissolved. Add the lemon juice and sugar, and strain into a cold, wet mould.

LESSON XXVIII

FOOD FOR INVALIDS, — Continued

When there is a lack of nutrition from any cause, or after any long-continued or prostrating disease, the system demands immediate nourishment. Food that contains the most nutriment in the most easily assimilated form is now needed.

Milk, to be taken slowly, — sipped by the spoonful, — is given in many cases. Egg-nog, meat broth, farina and oatmeal gruel, beef juice, and beef tea are suitable at such times.

After the crisis of a disease is past, the system needs gradual but complete nutrition. The appetite is clamorous, fickle, or perhaps altogether wanting. Much depends upon judicious diet, and care must be taken against over-feeding. Broiled game, chicken, chops, and steak are the most easily assimilated meats. Eggs, cream toast, baked potatoes, ice cream, blanc mange, simple puddings, and stewed fruits may be used.

RECIPE, No. 202. HOT EGGS FOR INVALIDS

Place a small bowl, suitable for serving, in a pan of water just below the boiling point; put in one teaspoon butter and let it run over the bottom and sides; break in one or two eggs, add a bit of salt, and pepper if liked, and stir with a spoon till egg is mingled and tastes hot; serve at once with toast or wafers. This is more acceptable to an invalid than is a cold raw egg, or a soft egg with the white, stringy and half cooked.

RECIPE, No. 203. BEEF JUICE

Broil half a pound of lean, juicy round steak, cut one inch thick, until each side is just seared and the juice will flow when cut. Divide into small pieces and press in a lemon squeezer (or a meat press if you have one). Put the juice into a hot cup and stand it in hot water; stir till the liquid is hot, but do not let it boil or cook enough to curdle. Salt slightly and serve immediately. If you have the cup in hot water and work quickly, there will be no need of reheating juice.

RECIPE, No. 204. BLANC MANGE

Soak one fourth cup Irish moss in cold water until soft; pick over, wash, tie in a thin lace bag, and put it into the double boiler with one pint milk; boil until it thickens when dropped on a cold plate. Add one fourth teaspoon salt, strain, and add one half teaspoon vanilla flavoring. Turn into a mould that has been wet with cold water.

Questions on Invalid Cookery

- | | |
|--|--|
| What do invalids need besides daintily prepared food? | Is it ever well for us to do without food for a day or two? |
| What objectionable things are sometimes left in a sick-room? | What kinds of food are suitable in the beginning of sickness? |
| What can you think of that would give comfort to an invalid? | What foods are suitable when the system demands immediate nourishment? |
| What would cause them discomfort? | What are the most easily assimilated foods? |

LESSON XXIX

EARLY VEGETABLES

RECIPE, No. 205. ASPARAGUS

Select thick, short stalks, tips not opened ; wash, break off lower end where it will snap easily, scrape off bracts and tough fibre on end. Wash again and tie in bundles. Use a deep narrow stew pan so that the stalks may stand upright, or lay them in a broad low pan. Nearly cover with boiling water, cover the pan and boil steadily twenty minutes or until tender. Pour out the water, salt it slightly and moisten the crust of toast in it ; spread with butter ; lay a few stalks on each slice, and add more bits of butter and salt. Serve hot as a course for dinner, or as the chief dish for luncheon or supper.

Celery, trim, scrape, and cut stalks in three-inch lengths.

Leeks, trim off rootlets and green tops, and divide if long.

Cucumbers, pare and quarter lengthwise.

Follow directions for asparagus for cooking, seasoning, and serving.

RECIPE, No. 206. GREENS, SPINACH

Select fresh juicy leaves ; if only slightly wilted soaking may revive them, but if bruised and decayed reject them.

Pick over, trim, rub well in cold water, lift out into another pan, and repeat this in five waters or until no sediment appears. This is an important part of the process. Drain and put into a kettle with the water that drips from them ; cook slowly at first, until the juice is drawn out, then quickly until tender. Use more water with dandelion greens if you dislike the strong flavor, and drain it off when done. When

cold it is a wholesome drink to those who like the bitter flavor.

After draining, chop the greens to be sure the long fibres are cut; season with butter and salt, and serve with lemon or vinegar.

RECIPE, No. 207. GREEN PEAS AND SHELL BEANS

Select smooth, green pea pods that squeak in handling and are not filled out tight; bean pods fresh or bright color, well filled but not beginning to open; unless fresh picked wash before shelling. Discard or lay aside for soup any white pea pods. Shell, pick over, rinse quickly and put into unsalted boiling water nearly to cover; let it boil down before serving. Cook small young peas about twenty minutes; large mealy peas one hour.

Shell beans are better if after boiling five minutes you add one fourth teaspoon soda; stir well; then turn into a colander; rinse and put again into boiling water and cook till quite soft, adding water as needed to prevent burning, and have enough to moisten when done.

Do not use white sauce or milk with peas or beans. Mash a small portion of the vegetable in the pan, add two tablespoons butter, two tablespoons cream if you have it, one half teaspoon salt and one fourth teaspoon pepper and one half teaspoon sugar; stir well and heat again just before serving.

RECIPE, No. 208. SWEET CORN

This is one of our most delicious and valuable summer vegetables. Corn is ripe when the silk turns brown but tastes differ as to how large it should be when picked. If too young it is mostly water, and if too old the hulls are tough and the juice is gluey rather than milky. Remove the husk and every bit of the silk. Cook in boiling water unsalted; it is not the cob but simply the grains on the cob that are to be cooked. From five to eight minutes is sufficient to set the milk and longer cooking does not improve it. Pierce a kernel with a fork and if the juice does not flow it is done. Remove at

once and cover with a napkin. If eaten from the cob, run the tine of a silver fork through the middle of each row with a sort of prying motion clear to the end of the row. This breaks each kernel and when spread with butter and salt the seasoning penetrates at once through the entire kernel and when eaten most of the hull is left on the cob. If preferred, shave and scrape off the pulp and season with salt, pepper, butter and reheat in a little milk or cream. Add a bit of sugar if the corn lacks sweetness.

RECIPE, No. 209. STUFFED VEGETABLES

Sweet Green Peppers. Cut off stem end, leaving a cup, or divide lengthwise making a shallow oval; remove the white fibre and seeds. For six cases allow one half cup of any kind of cold cooked meat or fish, finely chopped; make it go further by adding one half cup of fine soft bread crumbs, or rice, or any cold cooked cereal, or mashed peas, or beans; moisten with stock or any portions of left over gravy, or hot water, or white or tomato sauce. Season with minced onion, parsley, celery, or a bit of sweet herbs and salt and pepper. Fill the cases; cover with buttered cracker crumbs; place them in a shallow pan; add water or stock to cover the pan half an inch, and bake about twenty minutes.

RECIPE, No. 210. TOMATOES

Cook tomatoes in the same way. Slice off the top; scoop out the seeds and some of the pulp, and use it to moisten the filling.

RECIPE, No. 211. EGG PLANT

Trim off the stem, wash, cut through the middle, and cook fifteen minutes; scoop out the inside leaving a thick layer round the skin. Mix the inside with the filling, as for peppers; cover with crumbs, and bake twenty minutes.

RECIPE, No. 212. OTHER METHODS OF PREPARING VEGETABLES

After boiling until done, onions, cabbage, cauliflower and potatoes may be combined with white sauce or tomato sauce and cheese, covered with buttered cracker crumbs and baked until the crumbs are brown.

RECIPE, No. 213. FRUIT CONSERVES

Take five pounds of green grapes, three pounds of seeded raisins, the peel of five large oranges and three pounds of sugar. Cut the grapes, which should be really green or else the skins will be objectionable, in halves; remove the seeds; then put orange peel, grapes, and raisins through a meat chopper, and grind fine; add the sugar and orange juice and cook slowly about an hour. Turn into glasses and seal with paraffin. In spring use rhubarb cut in half-inch pieces, and in summer use ripe currants or gooseberries in place of green grapes. Currants should be heated, mashed, and sifted to remove the seeds.

LESSON XXX

ADDITIONAL RECIPES

RECIPE, No. 214. MILK SHERBET

With Peach or Strawberry. Mix one half cup of lemon juice, one cup of fruit juice and two cups of sugar; add gradually one quart of cold milk and when dissolved freeze as usual.

RECIPE, No. 215. STRAWBERRY ICE CREAM

Mash one quart of fresh clean berries, add one cup of sugar and when dissolved squeeze out the juice through cheese-cloth. Dilute with one pint of thin cream, or cooked soft custard, add sugar if needed and freeze as usual.

RECIPE, No. 216. VANILLA ICE CREAM

Dissolve one cup of sugar in one quart of thin scalded cream. Cool, add a bit of salt and one teaspoon of vanilla extract, or enough to flavor to taste. Strain and freeze as usual.

RECIPE, No. 217. HOT CHOCOLATE SAUCE

For Ice Cream. Melt two squares of chocolate over hot water and blend with it one teaspoon of arrowroot and one half cup of milk. Stir it into one cup of water and one half cup of sugar which have boiled five minutes, add a few grains of salt, one teaspoon of vanilla (and one fourth teaspoon of cinnamon if liked) and boil it five minutes. Keep it hot over boiling water till served. Pour a little over each portion of cream.

RECIPE, No. 218. BERRY CHARLOTTE

Use blueberries, raspberries, or blackberries. Stew one quart of berries in one cup of water for ten minutes. Mash well and turn into a coarse cheesecloth strainer, laid over a granite pan. Twist the corners together and squeeze out the juice. Add sugar to taste, and boil again until it almost jellies on the edge. Put a layer of thin, soft white bread, broken into half-inch bits, in a bowl or in cups; pour on hot syrup to wet the bread all through, and continue until all the syrup is used. Press each layer with a spoon until you cannot see any white portions. Serve very cold, with thin cream.

RECIPE, No. 219. HOW TO PREPARE SALADS

A portion of uncooked fruit or vegetable having tender fibre should be eaten daily on account of the valuable mineral salts, which are often wasted in cooking. Lettuce, celery, cucumbers, radishes, olives, onions, cabbage, watercress, parsley, and fruits that are not too tart and watery, may be used as salads. Vegetables should be washed with care in several waters, dried thoroughly, and kept on ice until ready for serving.

Salads may be eaten with salt alone, or with a plain dressing of salt, vinegar or lemon juice and pepper if desired. Dress the salad at the table, for it wilts quickly if allowed to stand.

When oil is used pour that on after the salt and pepper, then toss the leaves about till all are well oiled. If they are wet first with the vinegar the oil will not adhere.

Onion juice, or minced chives, improve potato and lettuce salads. Boiled Cream Dressing. Mix two teaspoons each of mustard and salt, one fourth teaspoon of paprika, three tablespoons of sugar, two tablespoons of melted butter and one cup of rich cream. Add four eggs well beaten and one half cup of hot vinegar. Cook in double boiler like soft custard, stirring constantly. This blends well in tomato and celery salads.

RECIPE, No. 220. CABBAGE OR COLD SLAW WITH BOILED DRESSING

1 c. shaved cabbage.	1 egg.
1 tsp. salt.	$\frac{1}{2}$ c. milk.
$\frac{1}{2}$ tsp. mustard.	1 tbsp. butter.
spk. cayenne.	$\frac{1}{4}$ c. vinegar.
1 tbsp. sugar.	

Trim off the decayed leaves, cut into quarters, soak awhile in cold water, drain, cut off the hard stalk, then slice or shave it off in thin strips. Mix the salt, mustard, cayenne, and sugar, add the beaten egg, the milk, butter, and vinegar. Cook it in a small saucepan over the fire, or in a double boiler, stirring constantly until it thickens like a custard. Pour it while hot over the cabbage and set away to cool.

RECIPE, No. 221. MAYONNAISE DRESSING

Put one teaspoon each of mustard, salt and powdered sugar, one eighth teaspoon paprika, and two raw egg yolks in a sauce pan placed in a large pan of ice water. Stir with wooden spoon till egg is thick and will stay on the left side of the pan. Tilt the pan, pour in one tablespoon olive oil which will run down to the lower side, where it may be stirred in gradually. Add oil in larger quantities as you proceed, and stir each portion in thoroughly before adding more. When thick add one teaspoon lemon juice. Use in all one pint of oil and two tablespoons each of lemon juice and vinegar. Omit mustard when fruit is used.

RECIPE, No. 222. BANANA SALAD

Select bananas that are ripe and firm without any tendency to break. Remove the skin and inner membranes and cut in halves lengthwise and crosswise. Dip each piece into mayonnaise dressing until well-coated and drained. If you like, sprinkle them with fine chopped nuts. Arrange a portion of shredded lettuce on individual plates, pile the strips of banana cob-house fashion on the lettuce, and fill the space with peeled and seeded Malaga grapes, or small pieces of grape-fruit pulp, or with ripe currants. Moisten the fruit with the

dressing. Put one or two of the tiny yellow lettuce leaves in the center of the cob-house and serve very cold.

RECIPE, No. 223. STEWED DRIED FRUIT

Select large plump fruit, not the highest priced, nor such as are very acid. Use prunes, peaches, apricots, or prunellas.

Wash the fruit in lukewarm water; let it soak half an hour and then rub each piece thoroughly until clean and free from grit; rinse and lay them in a large bowl of fresh cold water. Change frequently the water in which you are washing them. Let them soak all night and longer if needed, until they are well filled out and the surface smooth.

Turn them into an enamelled stewpan with the water and if needed add more to cover them. Set them over moderate heat and let them simmer closely covered until tender and the juice is boiled down quite thick.

This will develop a rich flavor and some fruits will require no sugar, in fact a little lemon will improve them. Let them cook a few minutes after adding sugar and, if you wish the syrup clear, skim out the fruit and strain the juice before turning it over the fruit.

RECIPE, No. 224. PRUNE WHIP

Wash, rub, rinse, and soak one fourth pound of prunes. When plump, simmer until very soft. Remove the stones and rub pulp through a strainer. Add sugar if tart and lemon juice if very sweet, and cook five minutes.

When cool add the well beaten whites of four eggs; turn the mixture into a buttered melon mold or into small individual molds, stand them in pan of hot water and bake slowly about twenty minutes, or until the whip is firm. Serve very cold with a soft custard made with the egg yolks; or with whipped cream if preferred.

RECIPE, No. 225. PICKED-UP CODFISH

Put enough salt codfish to fill a cup into a pan of cool water, and as it soaks tear it into strips and then into small

pieces, keeping it in the water until all is stripped. Let it stand an hour, and if very salt turn off the first water after it is shredded. Heat the fish in the water slowly, but do not let it boil. Scald one cup of milk and stir it gradually into two tablespoons of butter and flour heated in a saucepan. When thick and smooth add the drained fish and keep it hot over boiling water until everything else is ready; then beat one egg slightly and stir it into the fish and as soon as the egg has the cooked look, serve it in a shallow dish. With perfectly baked potatoes, hot and mealy, this is a meal which you will enjoy, and which can be repeated often without tiring of it.

APPENDIX

A

SEASONABLE, WELL BALANCED MEALS FOR THE FAMILY TABLE

Autumn.

Breakfast: Peaches or Grapes, Granulated Wheat, Coffee, Hash, Corn Cake, Milk.

Dinner: Chicken Fricassee with Short Cake, Sweet Potatoes, Celery, Shell Beans, Apple Pie, Candy or Block Sugar.

Luncheon or Supper: Celery Soup, Scalloped Oysters, or Sweet Corn, Cream of Rice Pudding, Rolls, Cocoa or Milk for Children.

Winter.

Breakfast: Orange, Rolled Oats, Coffee, Milk, Baked Potatoes, Picked-up Codfish, Rye Muffins.

Dinner: Beef Stew with Dumplings, Stuffed Green Peppers or Squash, Apple Tapioca Pudding, Nuts.

Luncheon or Supper: Split Pea Soup, Brown-bread Wafers, Cocoa or Milk, Baked Bananas, Hermits.

Spring.

Breakfast: Grape Fruit, or Stewed Prunes. Coffee, Omelet with Dried Beef or Bacon, Toast.

Dinner: Baked Fish, Mashed Potatoes, Creamed Onions, Stewed Tomatoes or Tomato Jelly Salad, Fruit Ice Cream, Sponge Cake.

Luncheon or Supper: Cold Pot Roast of Veal, Bread, Asparagus or Greens, Fruit Shortcake.

Summer.

Breakfast: Melon, Flaked Cereal, Coffee, Milk, Eggs Scrambled or Soft Cooked, Berry Muffins.

Dinner: Fish Chowder, Peas, Bread, Lettuce and Tomato Salad, Berry Charlotte.

Luncheon or Supper: Scalloped Lamb, Peas, Biscuit, Gingerbread, Cocoa or Milk.

Milk is not mentioned in every menu, but it may form a part of every meal for children, either plain, as a food not a beverage, or in cocoa shells, or custards and other simple puddings.

Tea also is not included, for except at supper for those who have been accustomed to it with their meals, it is seldom served at the table, since we have learned that it is better taken by itself, or with the bread and butter served at afternoon teas.

/

B

HOME-SEWING

THIRTY-TWO LESSONS

Explanation: This work is to be done in the home and brought to school and shown to the teacher in class, for comparison and credits. One lesson per week will be all that can reasonably be expected of pupils. It is desired that all this work be real, necessary home tasks, but if there is no darning, patching, mending, button-hole making required in the home at the time such lesson is assigned, then the contents of the scrap-bag may be used; later, as such work is needed in the home, the various lessons may be repeated in doing real home work, and credits may thus be increased.

At the close of every month, each girl shall bring a statement from parent or guardian, certifying that only her own work has been presented. This certificate shall be similar to the one for home-cooking.

Lesson I. 1. Make a straight seam not less than eighteen inches long, using any plain goods. 2. The same, using the over-stitch. The *straight seam* on machine.

Note: All pupils that have access to a machine should be required to repeat the hand-work on the machine when possible, and present both.

Lesson II. 1. Make a hem, one fourth inch by eighteen inches, on any thin goods, like muslin. 2. Repeat on machine. 3. Repeat on heavier goods, both by hand and with machine.

Lesson III. Hem a napkin, handkerchief, or towel: (1) by hand, (2) by machine.

Lesson IV. Repeat first part of Lesson II, and ruffle one edge. Sew on to ruffle a straight piece of the same goods. Sew over the seam a piece of the same goods, cut bias, turning edges under. Hand or machine work.

Lesson V. Repeat Lesson IV, using heavier goods. (For example, serge.)

Lesson VI. Take a piece of thin goods, five inches by eighteen inches or more; lay a hem one and one half inches wide on one edge. Run two one-fourth-inch tucks above the hem. Make a ruffle of this finished piece and set it on a straight piece of the same goods, covering the seam in the same way indicated in Lesson IV. (The placing of tucks is left to the judgment of the pupil.)

Lesson VII. Take the product of Lesson VI; slightly gather the edge of the straight piece, and sew a one-inch belt on it.

Lesson VIII. Sew a two-inch bias-cut facing along the edge of a straight piece of goods. Make it not less than eighteen inches long.

Lesson IX. Take two pieces of thin goods, each four inches by six inches; lay a hem one inch on one edge of each; make five button-holes in one piece, spaced one inch apart and one inch from each end. Sew buttons on the other piece, matching button-holes and buttons, and matching spaces.

Lesson X. Repeat Lesson IX, using heavy goods, and four trousers' buttons. Make hem two inches wide. Place the buttons one and one half inches apart, and equi-distant from each end. Sew the buttons on the goods by wrapping thread around under them. This is sometimes best accomplished by sewing over a large pin placed on top of the button.

Lesson XI. Repeat Lesson IX, using hooks, and eyes instead of buttons. Discuss darning.

Lesson XII. Bring to class samples of darned socks; heavy crash goods, darned. (Pupils' own work.) Discuss patching.

Lesson XIII. Bring to class samples of patching thin goods; heavy goods.

Lesson XIV. Bring from home samples of any kind of coarse needle work. Discuss in class.

Lesson XV. Bring to class samples of fine needle work. Discuss in class.

Lesson XVI. Make an apron with a pocket in it.

Lesson XVII. Make a dust-cap.

Lesson XVIII. Make two hot-iron holders.

Lesson XIX. Hemstitch a towel.

Lesson XX. Embroider an initial on a towel or napkin.

Lesson XXI. Make a sewing-apron.

Lesson XXII. Hemstitch a small handkerchief and whip lace around the edge.

Lesson XXIII. Repeat lessons on darning and patching.

Lesson XXIV. Patch with mending tissue a small triangular tear in thin suiting. (Place tissue between the patch and the tear, and press with a medium hot iron.)

Lesson XXV. Make a gingham bonnet.

Lesson XXVI. Work selected by the class for all to do.

Lesson XXVII. Bring samples of crocheting to class, and explain them.

Lesson XXVIII. Bring to class samples of mending other than what has already been submitted.

Lesson XXIX. Have every pupil bring to class work suggested by her mother.

Lesson XXX. Repeat Lesson XXIX.

Lesson XXXI and XXXII. Have every pupil make a plain waist for herself.

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Vegetable Foods. Anna Barrows.

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This image shows a blank, aged, cream-colored page, likely an endpaper or flyleaf from an old book. The paper has a slightly textured appearance with some minor discoloration and faint, illegible handwriting in the top right and bottom left corners. The handwriting is in a cursive style, but the ink is very light and the letters are difficult to decipher. The overall tone of the page is warm and vintage.

